

SR 89A: Cement Plant Rd - Black Hills Dr

Draft Environmental Assessment

TRACS No. 089A YV 349 H4129 01C
Project No. STP-A89-A(002)



August 2006



Arizona Department of Transportation
Intermodal Transportation Division
Environmental Planning Group
205 South 17th Avenue
Phoenix, Arizona 85007


Draft Environmental Assessment

for

SR 89A: CEMENT PLANT RD – BLACK HILLS DR
Yavapai County, Arizona
Project No. STP-A89-A(002)
TRACS No. 089 YV 349 H4129 01C

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On: 8-7-06

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On: Aug 15, 2006

This environmental assessment has been prepared in accordance with provisions and requirements of Chapter 1, Title 23 USC, 23 CFR Part 771, relating to the implementation of the National Environmental Policy Act of 1969.

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LIST OF ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ADT	average daily traffic
AGFD	Arizona Game and Fish Department
APS	Arizona Public Service Company
AZPDES	Arizona Pollutant Discharge Elimination System
BE	Biological Evaluation
BG	block group
CAAA	Clean Air Act Amendments
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
Corps	US Army Corps of Engineers
CT	census tract
dBA	A-weighted sound level in decibels
DCR	Design Concept Report
EA	Environmental Assessment
EPA	US Environmental Protection Agency
EPG	Environmental Planning Group
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
I-17	Interstate 17
Leq	equivalent energy level
LOS	level of service
MP	milepost
mph	miles per hour
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NACOG	Northern Arizona Council of Governments
NAP	Noise Abatement Policy
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
spp.	species (multiple species of the same genus)
SR	State Route
STIP	State Transportation Improvement Plan

LIST OF ACRONYMS AND ABBREVIATIONS – CONTINUED

SWPPP	Stormwater Pollution Prevention Plan
TPO	Transportation Planning Organization
US	United States
USC	US Code
USFWS	US Fish and Wildlife Service
VMT	vehicle miles traveled
VPD	vehicles per day

MITIGATION MEASURES

The following mitigation measures and commitments are *not* subject to change or modification without prior written approval of the Federal Highway Administration.

Arizona Department of Transportation Design Responsibilities

1. The final noise analysis and determination of appropriate abatement measures would be completed during final design following Title 23 Code of Federal Regulations, Part 772, United States Department of Transportation, *Federal Highway Administration Procedures for Abatement of Highway Traffic Noise and Construction Noise*, and the *Arizona Department of Transportation Noise Abatement Policy*. (Refer to page 35.)
2. The Arizona Department of Transportation would coordinate with the utility owners to determine the extent of utility conflicts, including relocations or reestablishment of required vertical clearances, during final design. (Refer to page 36.)
3. In compliance with the Federal Emergency Management Agency floodplain requirements, the Arizona Department of Transportation Project Manager would submit project design plans to the Yavapai County Floodplain Administrator's Office (520.771.3196) for review and comment during final design. (Refer to page 39.)
4. All required Clean Water Act Section 404 permits and Section 401 Water Quality Certification would be obtained by the Arizona Department of Transportation prior to any work in waters of the United States. (Refer to page 39.)
5. All disturbed soils that would not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity. (Refer to page 42.)
6. During final design, the Arizona Department of Transportation Project Manager would contact the Arizona Department of Transportation Environmental Planning Group Hazardous Materials Coordinator (602.712.7768) to determine the need for additional site assessment. (Refer to page 46.)

Arizona Department of Transportation Roadside Development Section Responsibilities

1. The Arizona Department of Transportation Roadside Development Section would determine who would prepare the Stormwater Pollution Prevention Plan. (Refer to page 40.)
2. In accordance with the Arizona Native Plant Law, the Arizona Department of Transportation Roadside Development Section would contact the Arizona Department of Agriculture at least 60 days prior to any construction activity. (Refer to page 45.)

Arizona Department of Transportation Prescott District Responsibilities

1. Because more than 1 acre of land would be disturbed, an Arizona Pollutant Discharge Elimination System permit would be required. The Arizona Department of Transportation Prescott District and the contractor would submit the Notice of Intent and the Notice of Termination to the Arizona Department of Environmental Quality. (Refer to page 40.)

Contractor's Responsibilities

1. The contractor would maintain access to adjacent commercial properties. (Refer to page 19.)
2. The contractor would comply with all terms and conditions of the United States Army Corps of Engineers' Section 404 Permit and the Arizona Department of Environmental Quality Section 401 Water Quality Certification. (Refer to page 39.)
3. Because more than 1 acre of land would be disturbed, an Arizona Pollutant Discharge Elimination System permit would be required. The Arizona Department of Transportation Prescott District and the contractor would submit the Notice of Intent and the Notice of Termination to the Arizona Department of Environmental Quality. (Refer to page 40.)
4. To prevent the introduction of invasive species seeds, all construction equipment would be washed at the contractor's storage facility prior to entering the construction site. (Refer to page 42.)
5. To prevent invasive species seeds from leaving the site, the contractor would inspect all construction equipment and remove all attached plant/vegetation debris prior to leaving the construction site. (Refer to page 42.)
6. All disturbed soils that would not be landscaped or otherwise permanently stabilized by construction would be seeded using species native to the project vicinity. (Refer to page 42.)

Standard Specifications Included as Mitigation Measures

1. According to the *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction*, Section 107 Legal Relations and Responsibility to Public, Subsection 05 Archaeological Features (2000 Edition), "When previously unidentified archaeological, historical, or paleontological features are encountered or discovered during any activity related to the construction of the project, the contractor would stop work immediately at that location and shall take all reasonable steps to secure the preservation of those resources and notify the Engineer." The Arizona Department of Transportation Engineer would, in turn, notify the Arizona Department of Transportation Environmental Planning Group Historic Preservation Team (602.712.7760) to evaluate the significance of the resources. (Refer to page 24.)

2. According to the *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction*, Section 104 Scope of Work, Subsection 08 Prevention of Air and Noise Pollution (2000 Edition), "The contractor shall control, reduce, remove or prevent air pollution in all its forms, including air contaminants, in the performance of the contractor's work." The contractor would comply with all air pollution ordinances, regulations, orders, etc., during construction. All dust-producing surfaces would be watered or otherwise stabilized to reduce short-term impacts associated with an increase in particulate matter attributable to construction activity. (Refer to page 26.)
3. According to the *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction*, Section 104 Scope of Work, Subsection 08 Prevention of Air and Noise Pollution (2000 Edition), "The contractor shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract. Each internal combustion engine used for any purpose on the work or related to the work shall be equipped with a muffler of a type recommended by the manufacturer." (Refer to page 35.)
4. According to the *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction*, Section 104 Scope of Work, Subsection 09 Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs (2000 Edition), "The contractor shall give special attention to the effect of its operations on the landscape and shall take special care to maintain natural surroundings undamaged." (Refer to page 37.)
5. According to the *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction*, Section 104 Scope of Work, Subsection 09 Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs (2000 Edition), the Prescott District would ensure that: "The contractor shall take sufficient precautions, considering various conditions, to prevent pollution to streams, lakes, and reservoirs with fuels, oils, bitumens, calcium chloride, fresh Portland cement, raw sewage, muddy water, chemicals, or other harmful materials. None of these materials shall be discharged into any channels leading to such streams, lakes, or reservoirs." (Refer to page 41.)
6. According to the *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction*, Section 107 Legal Relations and Responsibility to Public, Subsection 07 Sanitary, Health, and Safety Provisions (2000 Edition), should the contractor encounter potential hazardous or contaminated material, the contractor would immediately remove workers, barricade the area, and notify the Arizona Department of Transportation Engineer. The Arizona Department of Transportation Engineer would arrange for proper assessment, treatment, or disposal of those materials. Such locations would be investigated and proper action implemented prior to the continuation of work in that location. (Refer to page 45.)
7. According to the *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction*, Section 1001 Material Sources, Subsection 2 General (2000 Edition), any

material sources required for this project outside of the project area would be examined for environmental effects, by the contractor, prior to use, through a separate environmental analysis. (Refer to page 46.)

8. According to the *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction*, Section 107 Legal Relations and Responsibility to Public, Subsection 11, Protection and Restoration of Property and Landscape (2000 Edition), "Materials removed during construction operations such as trees, stumps, building materials, irrigation and drainage structures, broken concrete, and other similar materials shall not be dumped on either private or public property unless the contractor has obtained written permission from the owner or public agency with jurisdiction over the land. Written permission would not be required, however, when materials are disposed of at an operating, public dumping ground." Excess waste material and construction debris would be disposed of at sites supplied by the contractor, at a municipal landfill approved under Title D of the Resource Conservation and Recovery Act, at a construction debris landfill approved under Article 3 of the Arizona Revised Statutes Section 49-241 (Aquifer Protection Permit) administered by the Arizona Department of Environmental Quality, or an inert landfill. (Refer to page 46.)

I. INTRODUCTION

A. Need for an Environmental Assessment

This Environmental Assessment (EA) analyzes the social, economic, and environmental impacts of proposed improvements to a segment of State Route (SR) 89A, in the town of Clarkdale and the city of Cottonwood, Arizona. It has been prepared to comply with the National Environmental Policy Act (NEPA) of 1969 and the policies of the Federal Highway Administration (FHWA), which is the lead federal agency.

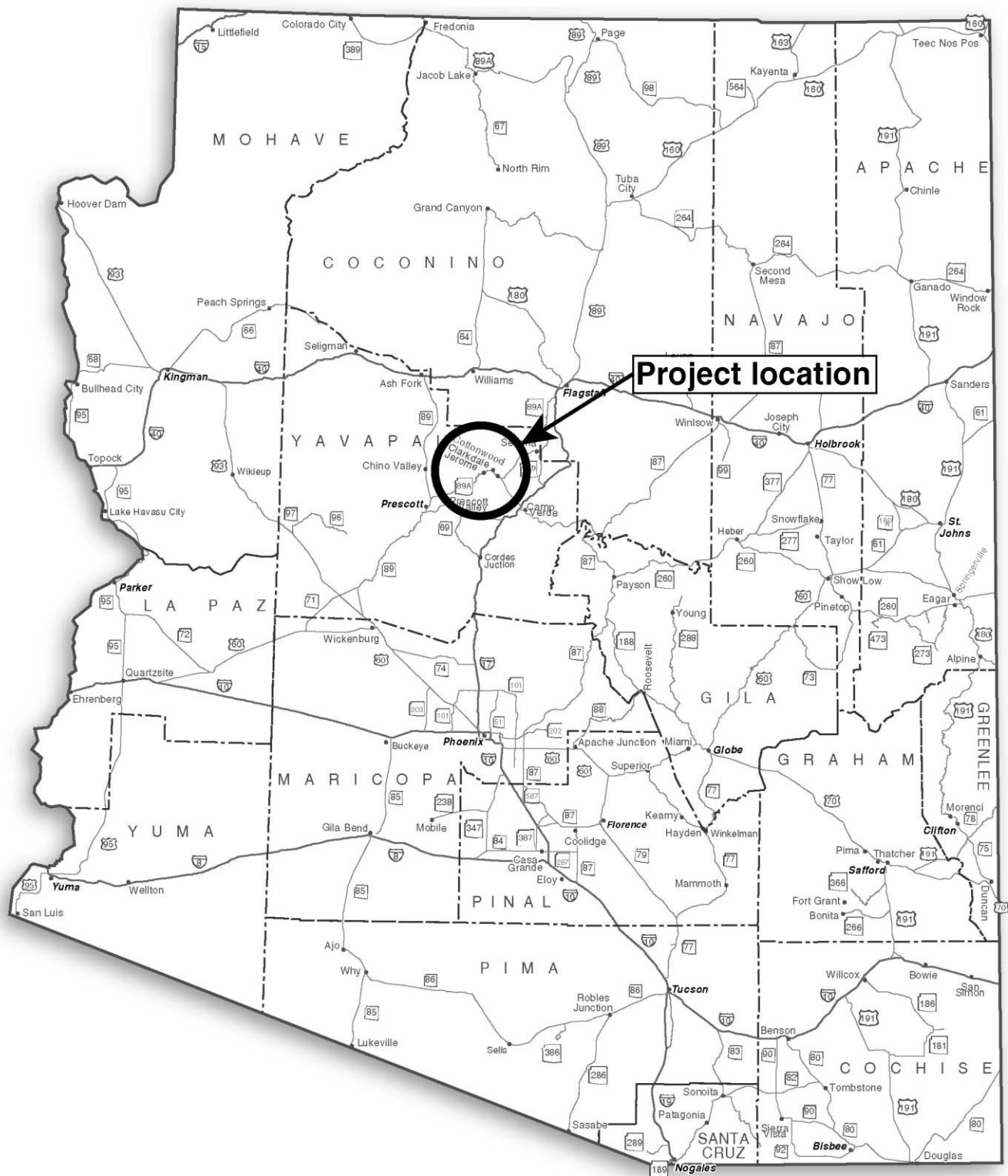
The EA process provides steps and procedures to evaluate the potential impacts of a proposed action while providing an opportunity for the public and local, state, and other federal agencies to provide input and/or comments through scoping and information meetings. The magnitude of impacts is evaluated based on context and intensity as defined in the Council on Environmental Quality's (CEQ) regulations. In addition, this EA also provides FHWA and the Arizona Department of Transportation (ADOT) an analysis to use in examining and considering the magnitude of impacts on sensitive social and environmental resources and assists in their decision-making process.

B. Location

The project is located along SR 89A within the town of Clarkdale and the city of Cottonwood, as well as on a portion of county land located between the two municipalities, in Yavapai County, Arizona (Figure 1). The project limits are SR 89A from Cement Plant Road, milepost (MP) 349.0, east to Black Hills Drive/Verde Heights Drive at MP 351.2, a distance of 2.2 miles (Figures 2 and 3). This segment of the SR 89A roadway corridor begins in the town of Clarkdale, passes adjacent business and residential properties, and continues into the city of Cottonwood as it proceeds southeast.

C. Background and Overview

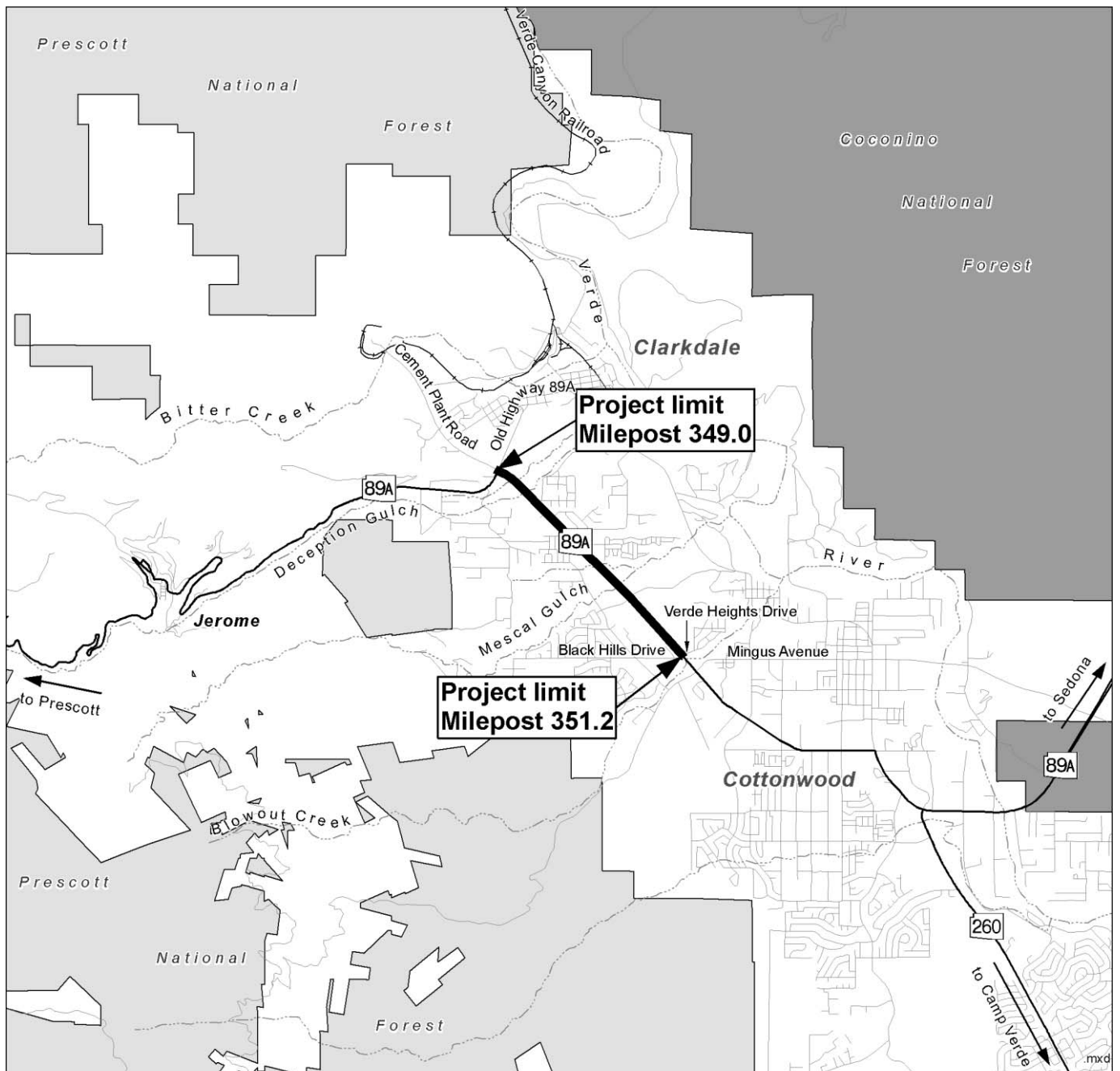
Arizona's State Highway System Log classifies SR 89A as a "minor arterial in a suburban area" (ADOT 1998). Minor arterials are part of the State's principal corridors for statewide travel and provide interstate and intercounty service. According to the ADOT Transportation Planning Division, rural highways such as SR 89A serve high-volume, long-distance trips within Arizona. SR 89A begins north of Prescott along SR 89 and ends at the intersection of Interstate 17 (I-17) south of Flagstaff.



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Figure 1. State map



Source: Arizona Transportation Information System GIS Coverage (2006)

Key

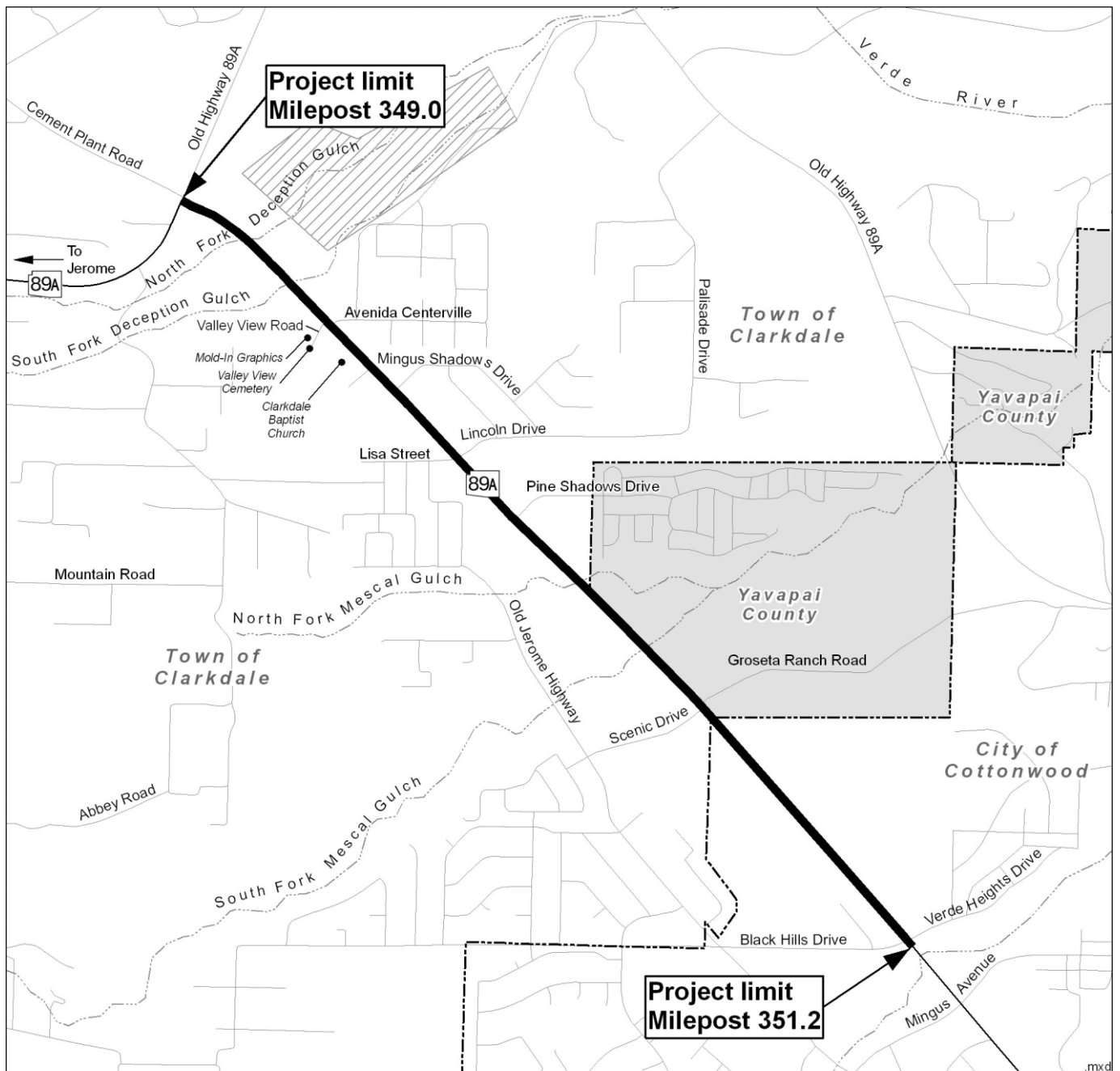
- Project area
- Coconino National Forest
- Prescott National Forest

Miles
0 1 2



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Figure 2. Vicinity map



Source: Arizona Transportation Information System GIS Coverage (2006)

Key

- Project area
- City/Town boundary
- Yavapai County
- Mountain Gate Community

Mile
0 0.5



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Figure 3. Project area map

Constructed in 1966 as the Cottonwood By-Pass Route, the roadway is used as a thoroughfare for traffic heading to numerous destinations, including Sedona and historic Jerome. As the growth of Cottonwood continues, the resulting increase in traffic would require additional roadway capacity. SR 89A carries interstate and intrastate traffic, serves commercial and residential areas, and supports tourism activities near the project area. A substantial number of heavy equipment associated with the cement plant at the western terminus of the corridor use SR 89A. The segment of SR 89A that includes the project area was evaluated in the 1999 *Verde Valley Transportation Study Update* (Lima & Associates 1999). This 1999 transportation study recommended widening this segment of SR 89A from two lanes to four lanes. The *Yavapai County General Plan 2003* proposed widening the roadway to five lanes (two travel lanes in either direction and a continuous center left-turn lane) (Dava & Associates 2003).

D. Existing Conditions

Currently, the roadway through the project area consists of a two-lane route that extends northwest–southeast. East of Pine Shadows Drive (MP 350.02), the roadway includes a continuous center left-turn lane (Figure 3). Each lane is 12 feet in width, and there are unpaved shoulders of variable widths on both sides of the road. Posted speed limits within the project limits are 55 miles per hour (mph) from Black Hills Drive/Verde Heights Drive (MP 351.22) to Avenida Centerville/Valley View Road (MP 349.43) and 35 mph west of Avenida Centerville/Valley View Road. There are eight primary intersections through the project area; four unsignalized intersections with stop signs on the adjoining roadways, three unsignalized three-legged “T” intersections with stop signs on the adjoining roadways, and a four-way stop at the intersection at the western terminus (SR 89A and Cement Plant Road/Old Highway 89A). The existing ADOT right-of-way is 100 feet wide.

II. PROJECT PURPOSE AND NEED

A. Purpose and Need

The town of Clarkdale and the city of Cottonwood have experienced substantial growth in recent years, with the population increasing by 60 percent and 55 percent, respectively, between 1990 and 2000. This trend is also reflective of the regional growth, with Yavapai County's population increasing by more than 56 percent during the same time frame (US Department of Commerce 2000). According to the *Yavapai County General Plan 2003*, the County's population is expected to grow to 240,849 by 2020, an increase of 44 percent from 2000. Similarly, the town of Clarkdale is expected to grow to 4,786, and the city of Cottonwood to 15,246; this represents an increase of 40 percent and 66 percent, respectively, from the 2000 populations.

Clarkdale and Cottonwood have approved several large residential and commercial developments in the areas adjacent to this portion of SR 89A. When these developments are completed, more vehicles would be using the highway to reach local and regional destinations. The number of vehicles turning onto and merging into SR 89A would correspondingly increase. The average daily traffic (ADT) volume in the project area was 14,500 vehicles per day (vpd) in 2004. The 2026 projection for ADT volumes is estimated at 40,000 vpd (ADOT 2004a).¹ The results of ADOT's Access Control and Capacity Needs Study (ADOT 2004a) indicate that SR 89A would need to be at least four lanes by 2026.

The method used to describe and determine capacity and traffic operating conditions is outlined in the Transportation Research Board's *2000 Highway Capacity Manual* and is expressed in terms of level of service (LOS). LOS generally describes roadway operating conditions such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS classifications range from A to F, with A as the best-quality traffic flow and F as the poorest (Figure 4). SR 89A is currently operating at an acceptable LOS throughout the project limits. If no improvements to the highway are implemented by design year 2026,² SR 89A would operate at an LOS F (ADOT 2004a). LOS B is generally considered by ADOT to be the minimum acceptable LOS when designing a rural roadway.

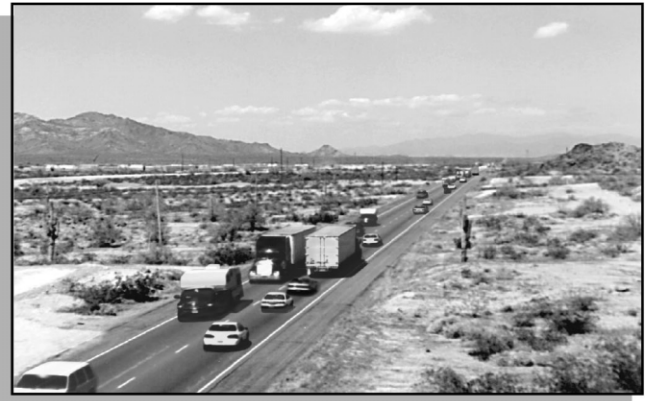
The traffic volume along SR 89A at the intersection with Black Hills Drive warrants a traffic signal. It is anticipated that a traffic signal would also be needed at the intersection of Groseta Ranch Road—

¹ According to ADOT's *Roadway Design Guidelines*, the design of new facilities should be based on traffic projections 20 years (to the nearest 5-year increment) in the future and consider future growth and impact of planned projects.

² According to 23 Code of Federal Regulations (CFR) § 772.5(a), *design year* is defined as a future year used to estimate the probable traffic volume for which a highway is designed.



Level of Service A



Level of Service D



Level of Service B



Level of Service E



Level of Service C



Level of Service F

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Figure 4. Level of service classifications

when the Grosetta Development is complete—and at the intersection of SR 89A and Avenida Centerville, once the planned residential development of the Mountain Gates Community is approximately 50 percent developed. Similarly, a signalized intersection at Cement Plant Road and at Lisa Street may be warranted by the year 2007. Even with future signalization, without additional lane capacity, at least three of these five intersections (SR 89A intersections with Lisa Street/Lincoln Drive, Grosetta Ranch Road/Scenic Drive, and Black Hills Drive/Verde Heights Drive) along SR 89A are expected to operate at a LOS F by the design year 2026.

Accident data from November 1, 2002, to October 31, 2005, were analyzed for this segment of the SR 89A corridor. There were 22 reported accidents during the three-year period (Table 1)(ADOT 2004a). Types of accidents reported on this segment of SR 89A include rear-ending (5), vehicles colliding at an angle (4), sideswiping (5), single vehicle (5), left turning (2) and backing (1).

Table 1. Summary of accidents from November 1, 2002, to October 31, 2005

Type	2002–03	2003–04	2004–05	Total
Property damage	3	4	2	9
Nonfatal injury	5	5	3	13
Total accidents	8	9	5	22

Source: ADOT (2004a).

Present conditions provide few passing opportunities, yet the continued presence of large trucks traveling through this section of SR 89A creates a demand for passing these slower-moving vehicles. Over 20 percent of the vehicles on the roadway at the western end of the project area near Cement Plant Road are trucks, while just over 5 percent of the vehicle mix throughout the rest of the project area is trucks (ADOT 2005). Groups of vehicles traveling close together are characteristic of peak or highest-use travel hours, and slow-moving trucks delay traffic movement. In addition, trucks are turning around on private property near Cement Plant Road and SR 89A once they become aware that they cannot follow SR89A up to Jerome because of the highway's grade and sharp turns.

The projected 2026 traffic volumes on the highway are anticipated to result in reduced gaps in traffic, making entering and exiting SR 89A more difficult. Projected increases in commercial and residential activity would increase the number of vehicles turning onto and off the roadway, which in turn, would increase the potential for turning accidents and congestion. Based on future traffic projections, the existing two-lane facility may delay future emergency response vehicles because of the lack of

continuous opportunities to pass other vehicles; the absence of roadway shoulders; and the potential for traffic stoppages, intersection delays, and traffic incidents that block through-travel.

Based on regional transportation needs, input from the affected agencies and the public, and existing roadway conditions, the objectives of the proposed SR 89A improvements include:

- increasing capacity,
- maintaining LOS,
- providing for passing opportunities,³
- separating opposing directions of traffic,
- improving the main intersections to help reduce accidents (anticipated as a result of projected increases in traffic volumes),
- providing for adequate turning movements for trucks at Cement Plant Road.

To meet these demands, the highway section needs to provide an acceptable capacity and traffic operation condition through the design year 2026.

ADOT has undertaken this EA to evaluate the impacts associated with the proposed action to improve the future traffic operations of the highway. In 1998, ADOT completed a study, entitled *Final Design Concept Report for State Route 89A Clarkdale–Cottonwood Highway*, describing in detail preliminary alternative highway improvements to alleviate future congestion and reduce traffic conflicts. The original Design Concept Report (DCR) evaluated existing conditions and projected future service needs extending to its design year 2015. To meet the transportation needs of the public, ADOT determined that the ultimate facility for this section of SR 89A should provide four through-lanes. As documented in the 1998 DCR, ADOT recommended access control for this portion of the roadway. An additional study, *SR 89A Cement Plant Road to Black Hills Drive Access Control and Capacity Needs Study* (ADOT 2004a), was completed. This study further evaluated the roadway with four lanes and restricted access and intersection controls, including roundabouts and traffic signals. The projected design year for the roadway was, therefore, extended from 2015 to 2026 for evaluation in the EA. In addition, consideration was given to providing long-term improvements to the corridor that would benefit regional transportation needs.

³ Adding a second lane in each direction would provide passing opportunities for motorists and emergency response vehicles.

B. Conformance with Regulations, Land Use Plans, and Other Plans

Improvements to SR 89A from MP 349.0 to MP 351.2 would conform to the *City of Cottonwood General Plan 2003–2013* (City of Cottonwood 2004), the *Yavapai County General Plan 2003* (Dava & Associates 2003), and the *Clarkdale General Plan* (Town of Clarkdale 2002). In addition, the *Verde Valley Transportation Study Update* (Lima & Associates 1999) and the *Verde Valley Transit Study* (Lima & Associates and Transit Plus 2000) also recommended changes to the roadway.

The proposed project would comply with applicable federal, state, and local land use planning regulations, along with ADOT design standards and American Association of State Highway and Transportation Officials (AASHTO) design guidelines.

C. General Project Schedule

Roadway improvements for SR 89A within the project limits are currently included in ADOT's Five-Year Transportation Facilities Construction Program, 2005–2009.

D. Issues Eliminated from Detailed Study

There are no known wild and/or scenic rivers, National Natural Landmarks, prime or unique farmland, wetlands, or sole source aquifers within the project area; therefore, there would be no impacts on these resources.

III. ALTERNATIVES

A. Alternatives Considered but Eliminated from Further Study

Relocating this portion of SR 89A to a new roadway corridor was eliminated from consideration because it would require substantially more new right-of-way, as well as increased impacts on businesses, residential properties, and other environmental resources than would implementing improvements within the existing corridor (ADOT 1998). Improving SR 89A within the existing corridor would be consistent with current planning documents, including the *Yavapai County General Plan 2003*, the *Verde Valley Transportation Study Update*, and both communities' general plans.

In considering improvements to SR 89A, alternatives were initially developed and evaluated in the 1998 DCR. These alternatives included widening the existing roadway from two to five lanes to allow free turning movements and access to and from SR 89A. The preferred alternative in the 1998 DCR consisted of a five-lane section (four travel lanes and a center continuous left-turn lane), where the roadway would be widened to the north approximately 18 feet from its current alignment. As a result of the 2004 *Access Control and Capacity Needs Study*, the preferred alternative in the DCR was eliminated from further consideration because it would not provide the desired level of access control to reduce the potential for head-on or turning accidents as traffic volumes and development in the area increase (ADOT 2004a). Access control is the regulation of public access to and from properties abutting highways. There are several levels of access control, from full access control (e.g., freeway) to roadways without access restrictions (e.g., arterial roadway). Full access control gives priority to through-traffic movement, provides access only through selected public roads, and prohibits at-grade crossing or direct access from adjacent properties. Without access control, abutting properties are permitted access to the highway, but the number, location, and geometrics may be regulated (ADOT 2004a).

B. Alternatives Considered for Further Study

After the completion of the DCR in 1998, ADOT, the City of Cottonwood, and the Town of Clarkdale decided to explore a higher level of access control along the corridor because of anticipated future development pressure; therefore, an access control and capacity needs study was prepared in 2004 (ADOT 2004a). The preferred alternative identified in the 1998 DCR was modified to include access control measures throughout the corridor for both typical four-legged and roundabout intersection alternatives.

1. No Action Alternative

The No Action Alternative would allow only minor improvements, routine maintenance, and pavement resurfacing. The road would remain two lanes throughout the project area, would continue to provide limited passing opportunities, and would not improve traffic operations or increase capacity. Without increasing the capacity of the existing roadway, the increase in traffic over the next 20 years would result in a lower and less desirable LOS than A, its current level, or B, the minimum acceptable LOS when designing a rural roadway. Increased congestion would result in longer travel time and could impair emergency vehicle response time. This alternative would also cause a continuing reduction in the ability of motorists to find opportunities to safely pass heavy trucks and other slow-moving vehicles traveling the road. The travel lanes would not be separated and access would not be controlled, which would potentially increase turning, head-on, and rear-end accidents as traffic volumes increase.

2. Traffic Signal Control Alternative

The Traffic Signal Control Alternative would provide a four-lane highway, with a 16-foot-wide raised median, and signalized traffic control—when warranted—at several intersections within the project area. This alternative would provide right-in/right-out/left-in only movements and stop sign control at all remaining intersections within the project area that would not warrant a signalized traffic control. The raised median would restrict all left-out movement and allow left-in access to some adjacent commercial and residential parcels. This would increase trip distances to some parcels by approximately 0.5 mile of out-of-direction travel. The raised median would reduce the potential for head-on, run-off-road, or turning accidents. This alternative would require the acquisition of approximately 17 acres of new right-of-way along the north side of SR 89A and would cost approximately \$9.0 million (including estimated construction and right-of-way costs). The Traffic Signal Control Alternative was eliminated from further consideration because it would require more right-of-way and would increase the potential for more serious injury and fatal accidents (associated with turning movements). Moreover, traffic would still be required to cross on-coming travel lanes and vehicles would be traveling at higher speeds than with the Roundabout Alternative.

3. Roundabout Alternative

The Roundabout Alternative would provide a four-lane highway, with an 8-foot-wide raised median, and roundabouts at five of the eight main intersections controlled by yield signs. The roadway would be widened to the north of the existing SR 89A alignment. The narrow median through the project area would reduce right-of-way impacts on adjacent landowners and would control turning movements for existing and proposed development. The raised median would hinder access to adjacent commercial and residential parcels and increase trip distances to some parcels by approximately 0.5 mile of out-of-direction travel. The raised median would reduce the potential for head-on, run-off-road, or

turning accidents. This alternative would require the acquisition of approximately 14 acres of new right-of-way along the north side of SR 89A and would cost approximately \$8.5 million (including estimated construction and right-of-way costs). The acreage required for this alternative would be less than the Traffic Signal Control Alternative because less right-of-way is required to construct the cross section (ADOT 2004a). The Roundabout Alternative may initially require unexpected or unusual operation for some motorists. This would diminish over time as motorists become more familiar with the presence and operation of the roundabouts. In addition, accidents in roundabouts tend to be less severe than at signalized intersections since vehicles circulate through roundabouts at low speeds (20 to 25 mph).

C. Preferred Alternative

The Roundabout Alternative was identified as the Preferred Alternative (Figure 5). It would effectively meet the purpose and need to accommodate future traffic demands by providing a divided four-lane highway throughout the project corridor while accommodating the need to restrict turning movements to reduce accidents. This alternative would provide for the future growth and would meet the transportation needs of Yavapai County as well as the traveling public. The LOS would remain at A, passing opportunities would increase, and the delays from heavy trucks and vehicles that travel this section of the roadway would be minimized. The roundabouts would reduce traffic speeds in this section of roadway without causing the congestion that often occurs with stopped traffic at signalized intersections. In addition, roundabouts would also decrease the severity and number of accidents at intersections, help regulate traffic flow, and provide the opportunity for trucks to turn around at Cement Plant Road. The Roundabout Alternative was presented to the Town of Clarkdale and the City of Cottonwood as an access control method for intersections in this segment of roadway. Both the Town of Clarkdale and City of Cottonwood have expressed their support for the Preferred Alternative. The Town of Clarkdale voted unanimously in favor of roundabouts, and the City of Cottonwood voted 6 to 1 in favor of them. Refer to Appendix A for agency correspondence.

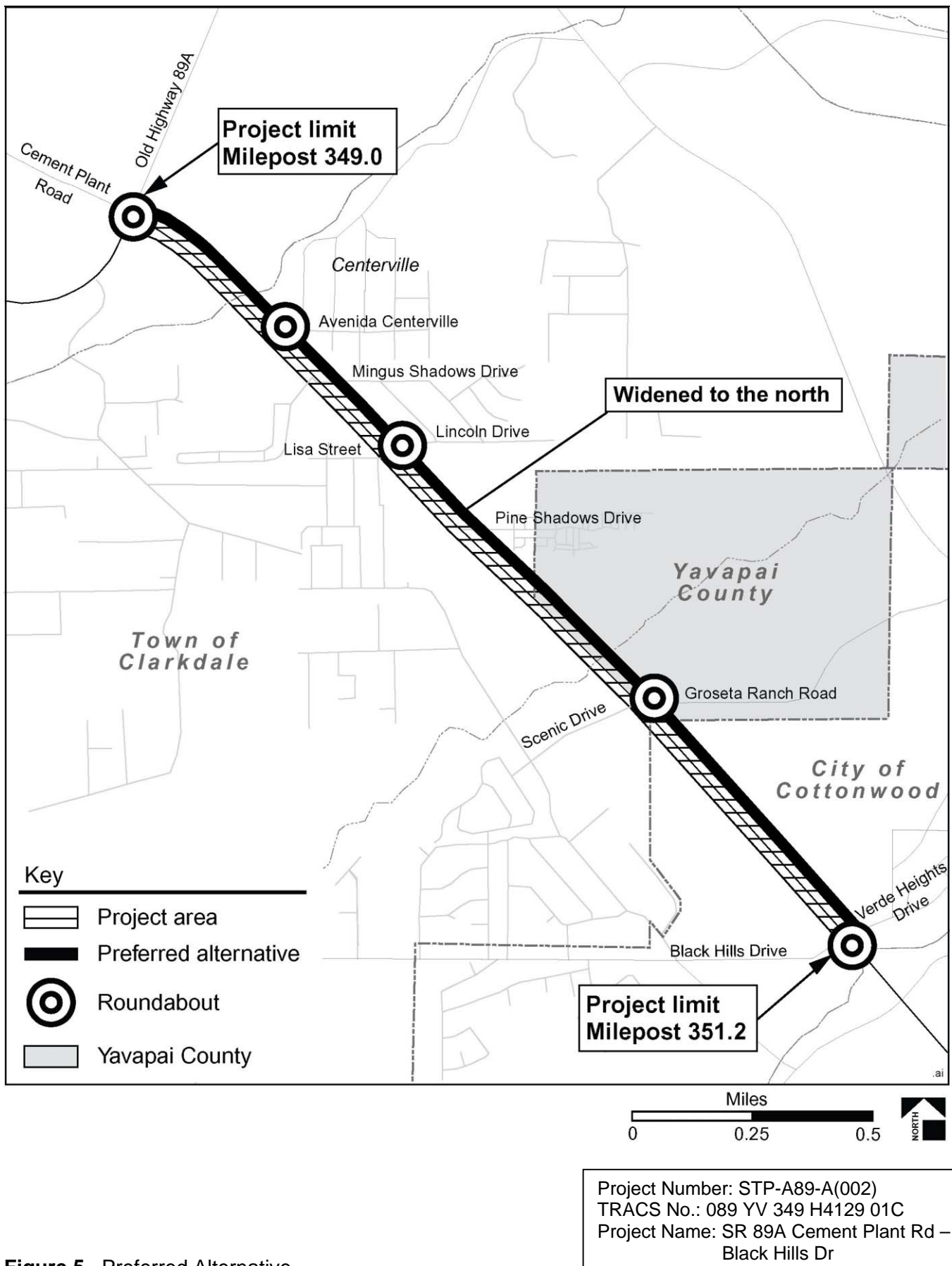


Figure 5. Preferred Alternative

IV. AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

The following information describes the affected environment within the project area and presents the potential effects of the Preferred Alternative. Measures to avoid or minimize impacts have also been identified. For this document, the project area, as graphically shown in Figure 5, is approximately 200 feet, 100 feet from either side of the centerline of the existing SR 89A roadway, between MP 349.0 and MP 351.2. Land ownership is identified in terms of public or private holdings. Jurisdiction implies the authority to regulate land uses (Figures 6 and 7). The visual or scenic resources identified could extend beyond the project area as defined above.

A. Methodology for Assessing Impacts

Potential impacts are described in terms of intensity (negligible, minor, moderate, or major), duration (short term or long term), type (beneficial, neutral, or adverse), and context (site specific, local, or regional). For the purposes of this analysis, the intensity or severity of the impact is defined as follows:

Negligible—impact to the resource is barely perceptible or not measurable and confined to a small area.

Minor—impact to the resource is perceptible or measurable, and it is localized.

Moderate—impact is clearly detectable or measurable and could have appreciable effect on the resource.

Major—impact would have a substantial, highly noticeable influence on the resource.

For the purposes of this analysis, duration of the impact is defined as follows:

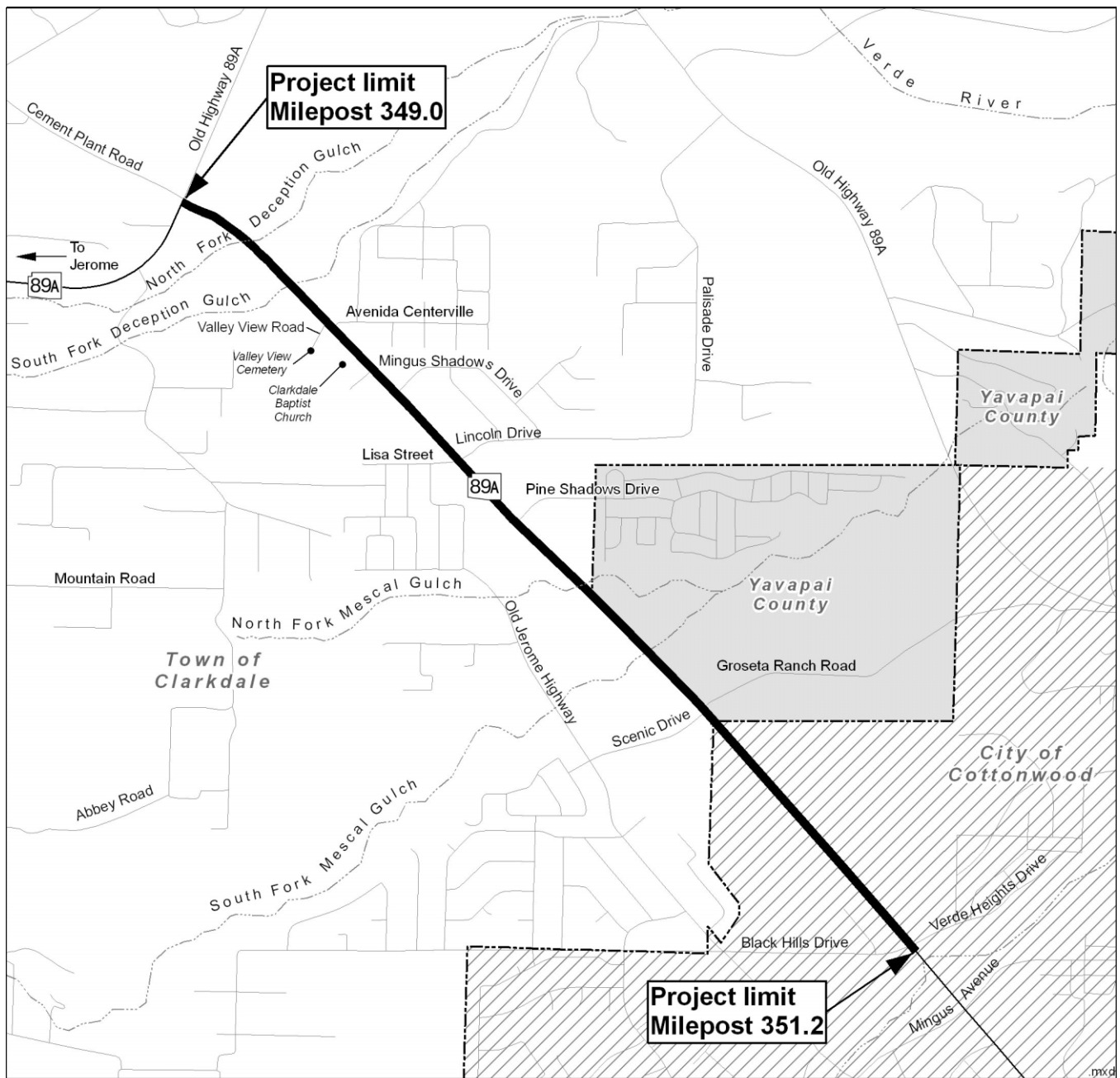
Short term—impacts that would be less than 5 years in duration.

Long term—impacts that would be 5 years or more in duration.

For the purposes of this analysis, impacts are described as either beneficial, neutral, or adverse.

B. Land Ownership, Jurisdiction, and Land Use

The project area includes private holdings and lands owned by the Town of Clarkdale, the City of Cottonwood, and Yavapai County. ADOT owns the existing right-of-way, approximately 50 feet on each side of the roadway centerline. The entire project area is located within Yavapai County (Figure 6).



Source: Arizona Transportation Information System GIS Coverage (2006)

Key

- Project area
- City/Town boundary
- City of Cottonwood
- Town of Clarkdale
- Yavapai County

Mile
0 0.5



Project Number: STP-A89-A(002)
TRACS No.: 089 YV 349 H4129 01C
Project Name: SR 89A: Cement Plant Rd –
Black Hills Dr

Figure 6. Land jurisdiction

Existing land use consists mainly of commercial, light industrial, and residential properties adjacent to the highway (Figure 7). Several commercial and industrial businesses are located in the northern end of the project area, and some single- and multifamily residences are located in proximity to the roadway; however, most of the land directly adjacent to the roadway is vacant. There is a community services facility (Clarkdale Baptist Church) at the western end of the project area. The Town of Clarkdale and City of Cottonwood have designated certain drainages as part of their trail and open space system in their respective general plans. These designated drainages include the north and south forks of both Deception Gulch and Mescal Gulch. However, the trails are on privately owned land, and there are no public easements to permit the public to use the trails.

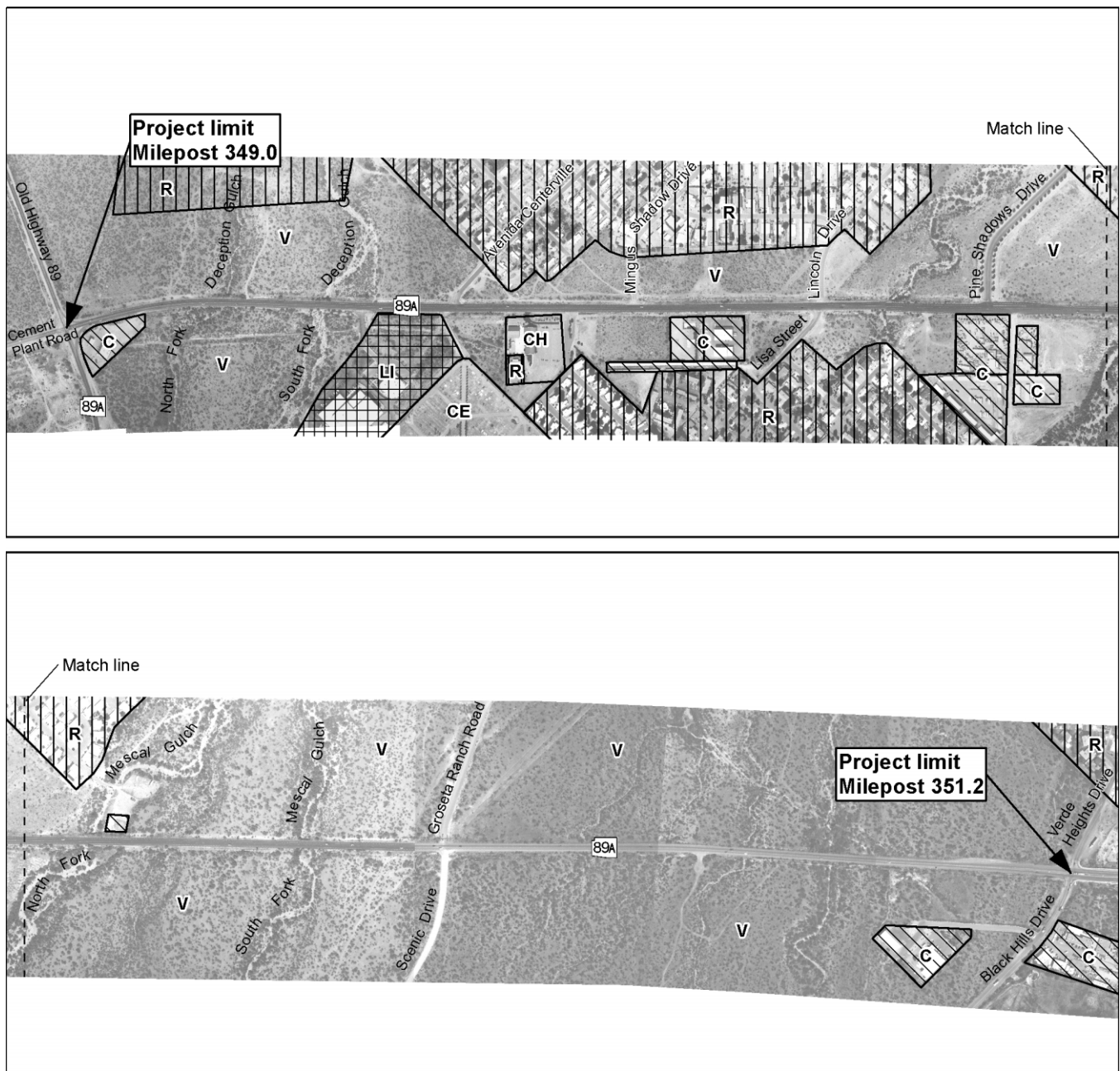
Long-term effects on land use from the Preferred Alternative would be the conversion of 14.1 acres of private land from its current uses and incorporation into a permanent transportation facility. Of the 60 total parcels adjacent to the roadway, 28 private parcels representing 16 different property owners would be affected. No residential or commercial structures would be acquired, and affected private property owners would be compensated at market value for property that is acquired in accordance with the Uniform Relocation Assistance Act, as amended in 1987. Existing land uses would continue after the implementation of the proposed project. The Preferred Alternative would conform to the *City of Cottonwood General Plan 2003–2013*, the *Yavapai County General Plan 2003*, and the *Clarkdale General Plan*, prepared in 2002.

Although existing uses would continue and access would be maintained, 14.1 acres of privately owned lands would be converted to a transportation corridor. Therefore, the Preferred Alternative would have long-term minor adverse project area impacts on land use from new right-of-way acquisition.

The No Action Alternative would not require any new right-of-way. There would be no impact on land use, ownership, or jurisdiction with the No Action Alternative.

C. Social and Economic Resources

Primary industry sectors in Yavapai County include manufacturing, commercial businesses, tourism, and government service. Manufacturing is the principal mainstay of the area economy. According to the Arizona Department of Commerce, Clarkdale's principal economic activity is serving the nearby mining areas; Cottonwood's principal mainstay is retail and service, with the city serving as a retail, service, and manufacturing hub for the larger Verde Valley (Arizona Department of Commerce 2005). Yavapai County and the communities of Cottonwood, Clarkdale, and nearby Jerome have experienced



Aerial Source: ADOT Photogrammetry

Key

	Commercial		Church
	Light Industrial		Cemetery
	Residential		Vacant

Feet
0 500 1,000



Project Number: STP-A89-A(002)
TRACS No.: 089 YV 349 H4129 01C
Project Name: SR 89A: Cement Plant Rd –
Black Hills Dr

Figure 7. Existing land use

substantial population growth in the past several decades, and business development and increased tourism (composed mainly of travelers and winter visitors) continues to contribute to economic growth in the region. No social or emergency services are located within the project limits. However, the Verde Valley Medical Center, both the Clarkdale and Cottonwood police stations, and several schools are located within 1 mile of the project area.

Short-term social impacts would occur during construction of this project. Motorists would experience temporary construction impacts typical of slow traffic movement in construction zones. Temporary traffic delays would occur for drivers requiring access from SR 89A to businesses or individual residences and for those traveling to and from the social services in the area. Impacts to existing traffic flow would be minimized by maintaining traffic in each direction and providing access to adjoining properties. Traffic control would be in accordance with the *Manual on Uniform Traffic Control Devices for Streets and Highways* (ADOT 2000), published by the United States (US) Department of Transportation, FHWA, including any revisions or additions, and/or associated provisions in the project plans, as determined by the ADOT Traffic Design Section during design.

After construction, the presence of roundabouts within the project corridor may not meet current driver and pedestrian expectations; as a result, local motorists and pedestrians may temporarily avoid (to the extent possible) or have difficulty navigating the roadway. This short-term moderate adverse impact would subside as drivers become more accustomed to roundabouts. There would be long-term impacts on tourists unaccustomed to driving through roundabouts.

Short-term economic impacts could include avoidance of construction activities on SR 89A by tourists who would seek alternative routes to their destinations. Patronage to businesses along the roadway could be reduced while construction occurs; however, access to adjacent commercial properties would be maintained during construction.

The majority of the long-term changes that would be created by the improvements related to vehicular access to and from the highway. Raised medians without median breaks would limit left-turn movements to specific areas along the highway and would result in out-of-direction travel for motorists seeking access to businesses and social services adjacent to this section of roadway. The medians in the highway would create an increase in travel distance up to one-half mile to and from several of the residential and commercial properties by requiring motorists to travel to the next roundabout before the ability to turn around and return to the local businesses on the opposite side of the road. Access to adjacent properties would be maintained, allowing for right-in/right-out traffic movement. Since facilities would still be accessible, there would be minimal impact on community cohesion. In addition,

businesses that rely on drop-in patrons to augment the local customer base for a portion of their business would be more likely to experience a loss in revenue than other businesses that are destination businesses. These impacts are not considered to be substantial and would be mitigated by the improved mobility and potential for accident reduction. While the median impedes direct motorist access to some businesses, the increased number of motorists who could more easily travel through the retail areas would offset this.

In conclusion, there would be short-term impacts during construction on motorists and business owners because of the inconvenience caused by typical slowing of traffic in construction zones. Long-term impacts would result from changes to vehicular access and acquisition of property. Once the roadway improvements are in place, tourists, local residents, and businesses would benefit by the more efficient and effective traffic operations along SR 89A. The improvements to SR 89A would have a beneficial effect on emergency services to the corridor. The pattern of traffic along the majority of SR 89A would not notably change with the increased capacity of the expanded highway. Therefore, the Preferred Alternative would not have a substantial impact on social and economic resources in the project limits.

The Preferred Alternative would have long-term moderate beneficial impacts on the community by providing appropriate access to adjacent properties while allowing traffic to continue through without delays. There would be minor short-term adverse economic impacts on the area from the project construction, but there would be no long-term adverse economic impacts.

Based on future traffic projections, the No Action Alternative would not make any improvements to the roadway and thus, would not address the established needs or meet the purpose of the project. SR 89A traffic would continue to experience delays, the LOS would decline, and the potential for accidents would not be reduced. The existing two-lane facility may delay emergency response vehicles in the future because of the lack of continuous opportunities to pass other vehicles and because of the potential for traffic stoppages, intersection delays, and traffic incidents that block through-travel. The No Action Alternative would not result in any acquisitions of private property or require additional easement from state or federal agencies, private landowners, or from the Town of Clarkdale or the City of Cottonwood. The No Action Alternative would have no change on vehicular access to residences or businesses. However, in the long term, an increase in delays experienced by motorists because of traffic congestion, continued traffic conflicts with uncontrolled access, and the lack of adequate passing opportunities may increase the accident rates on SR 89A and at the intersections in the project limits. Without the improvements (the No Action Alternative), traffic delays would continue to increase in frequency and duration, potentially deterring motorists from using the roadway and adjacent businesses. Therefore, the No Action Alternative would have a long-term moderate adverse impact on

social services in the area. The No Action Alternative would also have long-term minor adverse impacts on the local economies.

D. Title VI/Environmental Justice

Title VI of the Civil Rights Act of 1964 and *Executive Order 12898* provide guidance on identifying protected populations to prevent the exclusion of persons or populations from participation in, denial to persons or populations the benefits of, or the subjection of persons or populations to discrimination under any program or activity receiving federal financial assistance because of race, color, or national origin. See Appendix B for more information on the definition of Title VI and environmental justice parameters.

The proposed improvements follow the existing roadway alignment within an already developed area. Although 14 acres of land from 16 property owners would be acquired with the Preferred Alternative, the demographic characteristics of the property owner cannot be determined from census data. No residential or commercial displacements would occur, and access to adjacent properties would be maintained throughout construction. Minority or low-income residents and business people along the existing route would experience temporary impacts such as degradation in air quality, increases in noise levels, and potential temporary detoured access to adjacent properties. However, all residents, workers, and visitors in the project area would be subjected to the same construction-related impacts. When the project is completed, motorists may experience long-term benefit from decreased travel times as compared with the projected No Action Alternative in 2026.

Overall, no individuals or members of protected populations would be disproportionately adversely affected, either directly or indirectly, by the project because construction-related impacts would equally affect all residents, business owners, and motorists. Opportunities for input into the decision-making process were provided to the community at-large at the public information meetings and through notices in local newspapers. Details of the agency and public involvement activities for the project are described in Section V. Public and Agency Involvement. Benefits of this project for all motorists using the improved facility include reducing the potential of head-on and side-impact accidents, decreasing delays, and increasing the efficiency of traffic flows.

The Preferred Alternative has been developed in accordance with Title VI of the Civil Rights Act of 1964, as amended by the Civil Rights Act of 1968 (Title VIII), and conforms to the requirements of the Americans with Disabilities Act of 1990.

Based on this analysis, the Preferred Alternative and the No Action Alternative would cause no disproportionate adverse impacts on individuals or populations protected under Title VI, environmental justice, or both.

E. Cultural Resources

Legislation, including the American Antiquities Act of 1906, the Archaeological and Historic Preservation Act of 1974, and the Archaeological Resources Protection Act of 1979, have been established to provide protection for cultural resources and to ensure “future generations a genuine opportunity to appreciate and enjoy the rich heritage of our Nation” (Public Law 89-665). Cultural resources (historic properties) must be evaluated under each of these Acts to ensure adequate protection of our cultural heritage. In addition to acts that protect historic properties, the American Indian Religious Freedom Act of 1978 guarantees access to religious or sacred sites that are located on federal land.

Historic properties include prehistoric and historic districts, sites, buildings, structures, or objects included in or eligible for inclusion in the National Register of Historic Places (NRHP). Historic properties may be eligible for nomination to the NRHP if they “... possess integrity of location, design, setting, materials, workmanship, feeling and association ...” and if these resources are either associated with: A-significant themes in our nation’s history, B-significant persons in our nation’s history, or if they C-embody distinctive construction characteristics or works of a master, or D-have the potential to contribute information significant to history or prehistory.

1. Survey Data

The project area has been completely surveyed for cultural resources and the results are reported in: *Cultural Resources Survey of a 35.85-Mile Segment of U.S. Alternative Route 89 (U.S. 89A) Right-of-way in Northeastern Yavapai County, Arizona* (ADOT 1991), *Cultural Resources Survey of a 2.2-Mile-Long Segment of Arizona Department of Transportation-Owned Land Along State Route 89A Between Clarkdale and Cottonwood, Northeastern Yavapai County, Arizona* (ADOT 1996), and *A Cultural Resources Survey of 15 Acres at Five Intersections Along State Route 89A, Between Mileposts 349.0 and 351.2, Clarkdale and Cottonwood, Yavapai County, Arizona* (ADOT 2004b).

2. Archaeological/Historical Sites

The cultural resources surveys resulted in identification of six sites within the project area:

- Old US 89A, which includes a portion of the Prescott-Jerome Highway, and is part of the Historic State Highway System.

- Three abandoned segments of railroad bed for a line that transported ore from Jerome to Cottonwood.
- A large, low-density, prehistoric artifact scatter and two cobble masonry features.
- A prehistoric artifact scatter.
- A prehistoric field house, check dam, and artifact scatter.
- A historic and modern trash dump.

3. Agency/State Historic Preservation Office Determination

Consulting parties for this project include the Arizona State Historic Preservation Office (SHPO), the Yavapai-Apache Nation, and the Hopi Tribe. Copies of consultation letters received are included in Appendix A. The Yavapai-Apache Nation and the Hopi Tribe did not respond to request for consultation.

Old US 89A is part of the Historic State Highway System and is eligible for listing in the NRHP under Criterion D. A road mitigation report to document the eligibility of this segment of Old US 89A was developed (ADOT 2004c). This report documents the information potential of the roadway. Placement of a traffic roundabout at the intersection of Cement Plant Road and Old US 89A would have an effect on the historic design of the road; however, since the roadway is documented, SHPO concurred the Preferred Alternative would result in “no adverse effect” on Old US 89A as stated in a letter dated April 13, 2005 (Appendix A, page A-2).

The abandoned segments of railroad bed, and the historic/modern trash dump, were recommended to be ineligible for inclusion on the NRHP. SHPO determined that the segments of the historic railroad bed were ineligible for listing in the NRHP because they lacked integrity, and concurred that the historic/modern trash dump was ineligible for NRHP listing in a letter dated October 16, 1996 (Appendix A, page A-56).

The prehistoric artifact scatter with masonry features was previously tested to determine its NRHP eligibility. At that time, it was determined eligible for inclusion in the NRHP under Criterion D and subjected to testing and data recovery, after which SHPO concluded that the information potential of the site had been exhausted in a letter dated August 22, 1997 (Appendix A, page A-31).

An additional prehistoric artifact scatter, and the prehistoric field house site, both required archaeological testing to determine their eligibility for inclusion in the NRHP. A research design and plan of work for eligibility testing was developed and implemented for these sites; from the results of the additional investigation, the information potential of the sites had been exhausted, and therefore, they

are not considered eligible for inclusion in the NRHP. SHPO concurred with this determination in a letter dated June 9, 2006 (Appendix A, page A-65). Since no NRHP-eligible sites are located within the project limits, the Preferred Alternative would have no short- or long-term impacts on cultural resources. The SHPO concurred that the project would have “no adverse effect” on historic properties in a letter dated April 13, 2005 (Appendix A, page A-2).

According to ADOT’s *Standard Specifications for Road and Bridge Construction*, Section 107 Legal Relations and Responsibility to Public, Subsection 05 Archaeological Features (2000 Edition) (ADOT 2000a), “When previously unidentified archaeological, historical, or paleontological features are encountered or discovered during any activity related to the construction of the project, the contractor shall stop work immediately at that location and shall take all reasonable steps to secure the preservation of those resources and notify the Engineer.” The ADOT Engineer would, in turn, notify ADOT Environmental Planning Group (EPG) Historic Preservation Team (602.712.7760) to evaluate the significance of the resources.

The No Action Alternative would have no impact on cultural resources.

F. Section 4(f) Resources

Section 4(f) of the US Department of Transportation Act of 1966 (as amended and recodified in 1983) states that the FHWA “may approve a transportation program or project ... requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State or local significance, or land of an historic site of national, State, or local significance (as determined by the federal, State or local officials having jurisdiction over the park, area, refuge, or site) only if— (1) there is no prudent or feasible alternative to using that land; and (2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.” (49 United States Code [USC] § 303 [c]).

A “use” of a Section 4(f) resource, as defined in 23 CFR § 771.135(p) occurs: (1) when land is permanently incorporated into a transportation facility; (2) when there is a temporary occupancy of land that is adverse in terms of the statute’s preservationist purposes; or (3) when there is a constructive use of the land. A constructive use of a Section 4(f) resource occurs when the transportation project does not incorporate land from the Section 4(f) resource, but the project’s proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. For example, a constructive use can occur when:

- a) The projected noise level increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a resource protected by Section 4(f);
- b) The proximity of the proposed project substantially impairs aesthetic features or attributes of a resource protected by Section 4(f), where such features or attributes are considered important contributing elements to the value of the resource. An example of such an effect would be the location of a proposed transportation facility in such proximity that it obstructs or eliminates the primary views of an architecturally significant historical building, or substantially detracts from the setting of a park or historic site which derives its value in substantial part because of its setting; and/or,
- c) The project results in a restriction on access, which substantially diminishes the utility of a significant publicly owned park, recreation area, or an historic site.

There are no parks, recreation areas, wildlife and waterfowl refuges in the project area. One historic site determined eligible for listing in the NRHP was identified in the project area. Old US 89A, which is part of the Historic State Highway System, is recommended as eligible for listing in the NRHP under Criterion D, for its potential to yield important information about the development of Arizona's roadways. According to FHWA's Section 4(f) Policy Paper, revised March 1, 2005, historic properties that are recommended eligible under Criterion D are not subject to Section 4(f) evaluation.

The Town of Clarkdale and City of Cottonwood have designated Deception Gulch and Mescal Gulch as part of their trail and open space system in their respective general plans. However, the trails are on privately owned land and there are no public easements to permit the public to use the trails. Therefore, according to FHWA's Section 4(f) Policy Paper, revised March 1, 2005, Section 4(f) does not apply.

Because Section 4(f) does not apply to any resources within the project limits, neither the Preferred Alternative nor the No Action Alternative would impact Section 4(f) resources.

G. Air Quality Analysis

The 1990 Clean Air Act Amendments (CAAA) require that air quality impacts be addressed in the preparation of environmental documents. As required by the CAAA, the US Environmental Protection Agency (EPA) set National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: carbon monoxide (CO), nitrogen dioxide, ozone, particulate matter, sulfur dioxide, and lead. EPA has designated those airsheds that have not met the NAAQS as nonattainment areas and classified them according to the degree of severity of their nonattainment status.

States that fail to attain the NAAQS for any of the criteria pollutants are required to submit a State Implementation Plan (SIP), which outlines actions to be taken to attain compliance. In an effort to reduce air quality emissions, the State Transportation Improvement Plan (STIP) also evaluates projects to provide a basis for impacts on local conditions. This project has been included in the 2005–2007 STIP. This project is located in an area that complies with all NAAQS. Therefore, conformity procedures do not apply to this project.

Some deterioration of air quality may be expected from the operation of construction equipment and the slower traffic speeds associated with a construction zone. However, this would be a localized condition that would cease when this project is completed. Fugitive dust generated from construction activities must be controlled in accordance with ADOT specifications and local rules or ordinances.

According to ADOT's *Standard Specifications for Road and Bridge Construction*, Section 104 Scope of Work, Subsection 08 Prevention of Air and Noise Pollution (2000 Edition), "The contractor should control, reduce, remove or prevent air pollution in all its forms, including air contaminants, in the performance of the contractor's work." The contractor would comply with all air pollution ordinances, regulations, orders, etc., during construction. All dust-producing surfaces would be watered or otherwise stabilized to reduce short-term impacts associated with an increase in particulate matter attributable to construction activity.

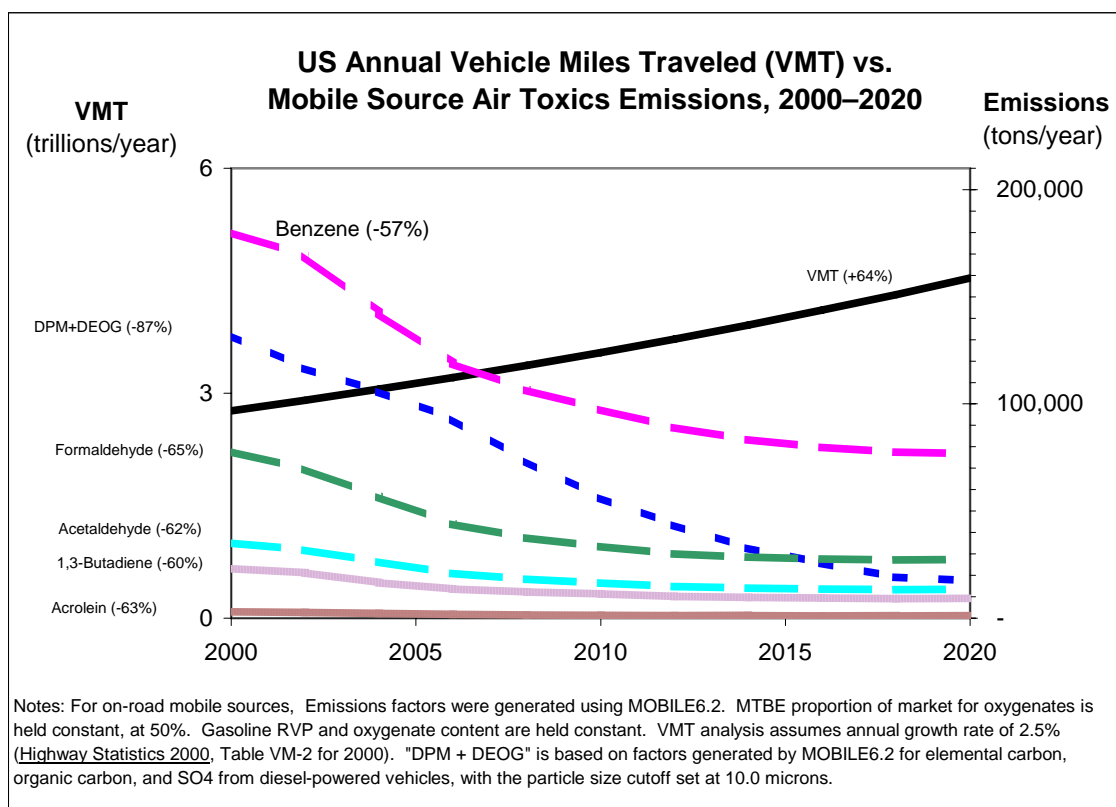
1. Mobile Source Air Toxics

In addition to criteria air pollutants for which there are National Ambient Air Quality Standards (NAAQS), the EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, nonroad mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) form a subset of the 188 air toxics defined by the Clean Air Act (CAA). MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted into the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead federal agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. The EPA issued a final rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources 66 FR 17229 (March 29, 2001). This rule was issued

under the authority in Section 202 of the CAA. In its rule, the EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy-duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in vehicle miles traveled (VMT), these programs will significantly reduce on-highway emissions of benzene, 1,3-butadiene, acetaldehyde, acrolein, and formaldehyde, as well as on-highway diesel particulate matter (PM) emissions as shown in the following graph:



As a result, the EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is preparing another rule under the authority of CAA Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary 6 MSATs.

Unavailable Information for Project-specific MSAT Impact Analysis

This EA includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the No Action and the Preferred alternatives in this EA. Because of these

limitations, the following discussion is included in accordance with CEQ regulations (40 CFR 1502.22[b]) regarding incomplete or unavailable information:

Information that is Unavailable or Incomplete. Evaluating the environmental and health impacts of MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling to estimate ambient concentrations resulting from the estimated emissions, exposure modeling to estimate human exposure to the estimated concentrations, and a final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

a. Emissions

The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model—emission factors are projected using a typical trip of 7.5 miles and an average speed for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location and time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects and cannot adequately capture emissions effects of smaller projects. For PM, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both PM and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, the EPA has identified problems with MOBILE 6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE 6.2 is an adequate tool for projecting emissions trends and for performing relative analyses between alternatives for very large projects, but it is not sensitive enough either to capture the effects of travel changes associated with smaller projects or to predict emissions near specific roadside locations.

b. Dispersion

The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can

occur at some location and time within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area and to assess potential health risks. The National Cooperative Highway Research Program is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, the FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

c. Exposure Levels and Health Effects

Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. Additionally, considerable uncertainties are associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives would likely be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

As discussed above, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can provide a basis for identifying and comparing the potential differences among MSAT emissions, if any, and between the No Action and Preferred alternatives. The following qualitative assessment is derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives* (see www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm).

For the Preferred Alternative in this EA, the amount of MSATs emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for the No Action and Preferred alternatives. The Preferred Alternatives will add capacity to the existing roadway; however, the VMT for the Preferred Alternative is expected to be similar to the No Action Alternative VMT because no nearby alternative routes exist (See Table 2). Any increase in VMT would lead to proportionally higher MSAT emissions for the Preferred Alternative along the highway corridor. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to the EPA's MOBILE 6.2 emissions model, emissions of all priority MSATs, except for diesel PM decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected because of the inherent deficiencies of technical models.

Table 2. Travel characteristics

Estimated annual average daily traffic (ADT vehicles per day)						
Alternate	2004			2026		
	SR 89A	Arterials	Total	SR 89A	Arterials	Total
No Action	14,500	NA	14,500	40,000	NA	40,000
Preferred	—	—	—	40,000*	NA	40,000*

Estimated daily vehicle miles of travel (VMT Per day)						
Alternate	2004			2026		
	SR 89A	Arterials	Total	SR 89A	Arterials	Total
No Action	31,900	NA	31,900	58,801	NA	58,801
Preferred	—	—	—	58,801*	NA	58,801*

Note: Dash signifies no data; NA signifies not applicable.

*Traffic engineers anticipate negligible differences in future ADT and VMT due to induced travel.

Emissions will probably be lower than present levels in the design because of the EPA's national control programs that are projected to reduce MSAT emissions between 57 and 87 percent within a 20-year period (2000–2020). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area will likely be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the Preferred Alternative will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, there may be localized areas where ambient concentrations of MSATs could be higher under the Preferred

Alternative than the No Action Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections. However, as discussed above, the magnitude and the duration of these potential increases compared to the No Action Alternative cannot be accurately quantified because of the inherent deficiencies of current models. In sum, when a highway is widened and thus is closer to receptors, the localized level of MSAT emissions for the Preferred Alternative could be higher relative to the No Action Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions, except for diesel PM). Also, MSATs will be lower in other locations when traffic shifts away from them. However, the EPA's vehicle and fuel regulations coupled with fleet turnover will eventually cause substantial reductions that, in almost all cases, will cause region wide MSAT levels to be significantly lower than today.

Construction activity may generate a temporary increase in MSAT emissions. Project-level assessments that render a decision to pursue construction emission mitigation will benefit from a number of technologies and operational practices that should help lower short-term MSATs. In addition, the federal Safe, Accountable, Flexible, Efficient Transportation Equity Act—a Legacy for Users (SAFETEA—LU) has emphasized a host of diesel retrofit technologies in its Congestion Mitigation and Air Quality (CMAQ) provisions—technologies that are designed to lessen many MSATs.⁴

Construction mitigation includes strategies that reduce engine activity or reduce emissions per unit of operating time. Operational agreements that reduce or redirect work or shift times to avoid community exposures can have positive benefits when sites are near vulnerable populations. For example, agreements that stress work activity outside normal hours of an adjacent school campus would be operations-oriented mitigation. Technological adjustments to equipment, such as off-road dump trucks and bulldozers, could also be appropriate construction-mitigation strategies. These technological fixes could include PM traps, oxidation catalysts, and other devices that provide an after-treatment of exhaust emissions. The use of clean fuels, such as ultra-low sulfur diesel, also can be a very cost-beneficial strategy.

The EPA has listed a number of approved diesel retrofit technologies; many of these can be deployed as emissions mitigation measures for equipment used in construction (for this list, see www.epa.gov/otaq/retrofit/retroverifiedlist.htm).

⁴ SAFETEA-LU, Public Law 109-59, August 10, 2005.

The Preferred Alternative would have long-term minor beneficial impacts on air quality in the local area by reducing congestion and emissions, but short-term minor adverse project area impacts may occur during construction.

The No Action Alternative would not provide for improved traffic flows. This alternative may lead to increased congestion and emissions and, therefore, may potentially have long-term minor adverse impacts on local air quality.

H. Noise Analysis

An analysis of potential noise impacts was conducted within the proposed project area, pursuant to the ADOT Noise Abatement Policy (NAP), dated March 21, 2000 (ADOT 2000b), and in accordance with the provisions of 23 CFR § 772—Procedures for Abatement of Highway Traffic Noise and Construction Noise. The results of the analysis were documented in *Draft Noise Technical Analysis Report SR 89A, Clarkdale-Cottonwood* (ADOT 2005). FHWA's Noise Abatement Criteria (NAC) are delineated by land use categories and their associated acceptable exterior noise levels (in dBA⁵).

There are three land use activity categories as defined by FHWA's NAC within the project area: Activity Category B (residences, picnic areas, parks, churches and schools); Activity Category C (developed properties not included in Activity Category B); and Activity Category D (undeveloped lands). Activity Category D properties were not evaluated in the noise analysis since they are undeveloped and not considered wilderness or sensitive areas. The recommended NAC threshold for Activity Category B is 67 dBA and for Activity Category C is 72 dBA. Noise abatement is considered when the sound level “approaches” 67 dBA- or 72 dBA-equivalent energy level⁶ (Leq) for Activity Category B or Activity C land uses, respectively. “Approach” is defined as levels greater than 64 dBA for Activity Category B or 69 dBA for Activity Category C. This level is typically applied to exterior areas associated with the land use type (residential, commercial) in which lowered noise levels would be of benefit. Traffic noise impacts that occur when the predicted traffic noise level substantially (15 dBA-Leq) exceeds the existing noise level are evaluated by ADOT for potential abatement.

The FHWA-approved noise model STAMINA/OPTIMA 2.0 was used to calculate existing (2004) noise levels, as well as noise levels for both the Preferred Alternative and the No Action Alternative in 2024.⁷

⁵ The human ear reacts differently to sound energy in different frequency ranges. An A-weighting curve reduces the perceived noise by a fixed number of decibels, depending on the frequency. The resulting sound pressure level represents noise as the human ear perceives sound.

⁶ Equivalent energy level is the steady state level, which, in a stated period of time, would contain the same amount of sound energy as a time-varying sound level during the same period. It is, therefore, an average energy level.

⁷ Noise analysis is generally completed for a 20-year horizon, and, therefore, may not be consistent with the design year.

Future noise levels in the project area were evaluated for 68 sensitive receivers (Table 3). These receivers represented residential land use (64 residences and 1 church [Activity Category B]) and commercial land use (3 businesses [Activity Category C]).

With the implementation of the Preferred Alternative, projected noise levels would approach or exceed the NAC for two receivers (R 19 and R 66C). If the Preferred Alternative were to be implemented, 2024 noise levels would be 0–4 dBA higher than the existing conditions—with the exception of R 64C. This commercial site (R 64C) would experience increases of 7 dBA when compared to existing conditions. However, even with a 7-dBA increase, R 64C would still be below the NAC for commercial properties.

With both the No Action and Preferred alternatives, projected noise levels in 2024 at each of the 68 receivers would not substantially exceed (by 15 dBA or more) existing noise levels. Because the Preferred Alternative would increase noise levels at R 19 and R 66C to approach or exceed the NAC thresholds, noise mitigation was considered for these two receivers.

Table 3. Existing and projected noise levels (dBA-Leq[h])

Receiver	Receiver description	Modeled existing conditions (peak 2004)	Modeled No Action (peak 2024)	Modeled Preferred (peak 2024)
1	Mobile home residence	59	63	62
2	Mobile home residence	60	64	63
3	Mobile home residence	55	59	59
4	Mobile home residence	56	59	58
5	Mobile home residence	53	57	56
6	Mobile home residence	51	55	55
7	Mobile home residence	51	54	54
8	Mobile home residence	54	57	57
9	Mobile home residence	51	55	54
10	Mobile home residence	55	59	58
11	Mobile home residence	56	60	59
12	Mobile home residence	56	60	59
13	Mobile home residence	56	60	60
14	Mobile home residence	51	55	54
15	Mobile home residence	52	55	55
16	Mobile home residence	52	56	55
17	Mobile home residence	53	57	56
18	Mobile home residence	57	61	60
19	Church	64	68	66
20	Single family residence	56	60	58
21	Single family residence	52	56	55
22	Single family residence	50	54	53
23	Single family residence	52	55	54
24	Single family residence	50	54	53

Source: ADOT, *Draft Noise Technical Analysis Report SR 89A, Clarkdale-Cottonwood 2005*.

Notes: Shaded areas represent mean projected noise levels that approach or exceed the NAC.

Table 3. Existing and projected noise levels (dBA-Leq[h]) (*continued*)

Receiver	Receiver description	Modeled existing conditions (peak 2004)	Modeled No Action (peak 2024)	Modeled Preferred (peak 2024)
25	Single family residence	53	57	55
26	Single family residence	49	52	51
27	Single family residence	51	55	54
28	Single family residence	47	50	50
29	Apartment Units	55	58	57
30	Apartment Units	53	57	55
31	Apartment Units	52	56	54
32	Apartment Units	52	55	54
33	Apartment Units	50	54	53
34	Apartment Units	48	51	50
35	Single family residence	48	52	51
36	Single family residence	55	59	58
37	Single family residence	59	63	61
38	Single family residence	59	63	61
39	Single family residence	58	61	60
40	Single family residence	54	58	56
41	Single family residence	53	56	55
42	Single family residence	51	54	53
43	Single family residence	50	54	53
44	Single family residence	54	58	57
45	Single family residence	50	54	53
46	Single family residence	52	55	54
47	Single family residence	59	62	62
48	Single family residence	55	59	58
49	Single family residence	52	55	54
50	Single family residence	54	57	56
51	Single family residence	53	56	55
52	Single family residence	57	61	60
53	Single family residence	53	57	56
54	Single family residence	52	56	54
55	Single family residence	57	62	61
56	Single family residence	55	60	59
57	Single family residence	51	56	55
58	Single family residence	51	55	54
59	Single family residence	50	54	53
60	Single family residence	52	56	55
61	Single family residence	51	56	55
62	Single family residence	51	55	54
64 ^a	Single family residence	51	55	50
64C ^b	Commercial	60	64	67
65	Single family residence	51	55	51
65C	Commercial	63	67	65
66	Single family residence	51	55	51
66C	Commercial	68	71	69

Source: ADOT, *Draft Noise Technical Analysis Report SR 89A, Clarkdale-Cottonwood 2005*.

Notes: Shaded areas represent mean projected noise levels that approach or exceed the NAC.

^a No receiver was designated as "R 63" in the noise report; therefore, it is not included.

^b C—Commercial receiver.

Noise levels at the Clarkdale Baptist Church (R 19) are projected to be 66 dBA with the implementation of the Preferred Alternative; this would exceed the NAC of 64 dBA. However, this church has direct access to the highway and would require gaps in any sound barrier to maintain that access. These openings would limit the effectiveness of any sound barriers; therefore, sound barriers were not recommended for this receiver. In addition, the Preferred Alternative would result in a 2 dBA decrease from the projected 2024 No Action Alternative noise levels.

With the implementation of the Preferred Alternative, noise levels at R 66C are projected to be 69 dBA, exceeding the 68 dBA approach threshold for commercial properties. As with the church, an effective barrier at this location would eliminate access to the business. Additionally, the ADOT NAP does not consider mitigation for businesses reasonable because these establishments generally prefer visibility from the roadway over noise mitigation. Therefore, no mitigation was recommended for this receiver.

On the basis of the noise analysis, the Preferred Alternative would have minor adverse long-term impacts on noise levels in the project area. A final noise analysis and determination of the appropriate noise abatement measures would be completed during final design following 23 CFR § 772, US Department of Transportation, *FHWA Procedures for Abatement of Highway Traffic Noise and Construction Noise* (2005), and the *Arizona Department of Transportation Noise Abatement Policy* (2000b).

According to ADOT's *Standard Specifications for Road and Bridge Construction*, Section 104 Scope of Work, Subsection 08 Prevention of Air and Noise Pollution (2000 Edition), "The contractor shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract. Each internal combustion engine used for any purpose on the work or related to the work shall be equipped with a muffler of a type recommended by the manufacturer."

Under the No Action Alternative, noise would rise with traffic increases. Noise levels would approach or exceeded the NAC for the 2024 No Action Alternative at three of the 68 identified sensitive receiver sites: R 2 (a mobile home), R 19 (the Clarkdale Baptist Church), and R 66C (a commercial property). In general, the predicted 2024 noise levels with the No Action Alternative would be 3–6 dBA higher than the existing (2004) conditions and generally 0–5 dBA higher than the Preferred Alternative. The No Action Alternative, therefore, would produce long-term minor adverse noise impacts.

I. Utilities

The following entities have utilities in the study corridor:

- Arizona Public Service Company (APS)—underground and overhead electric lines
- Qwest Communications—fiber optic and underground telephone lines
- Cable One of Cottonwood
- City of Cottonwood—sanitary sewer
- Cottonwood Water Works
- Town of Clarkdale—sanitary sewer
- UniSource Energy Services—natural gas pipeline

There are linear utility facilities (power, telephone) that run parallel to SR 89A, which are generally located 1–2 feet inside of the ADOT right-of-way. A review of the ADOT Prescott District Permit Log shows permits have been issued to all of the above-mentioned utilities. ADOT Utilities and Railroad Section indicated that APS, Cable One, and the City of Cottonwood have prior rights. Those utilities that have prior rights require relocation by ADOT, while a utility in the existing right-of-way without prior rights would be required to relocate at the expense of the applicable company.

The Preferred Alternative would require acquisition of, and construction in, new right-of-way, which would impact existing utilities. Existing utilities adjacent to the roadway would be impacted with the widening or replacement of necessary structures such as culverts. The extent of utility conflicts would be determined during final design. If needed, relocations, including the reestablishment of required vertical clearances, would be coordinated with the utility owners during the final design phase. The respective utility owners would be responsible for notifying customers of any potential service interruptions. Short-term minor adverse local impacts may occur because of possible interruptions in service during relocation activities associated with the Preferred Alternative; however, this alternative would have no long-term impacts on existing utilities.

The No Action Alternative would have no impact on utilities.

J. Visual Resources

The project area is located in a rural setting with minor commercial and residential development scattered along the corridor. Commercial and residential buildings in the project area feature a range of architectural styles, primarily one story in height. The terrain along the corridor consists of gently rolling hills and dissected washes, most notably Mescal and Deception gulches. Mesquite trees line the dry washes and blanket the hills. The mature cottonwood trees lining the Verde River and the vivid red and

orange sandstone formations of the Colorado Plateau form a distinctive backdrop for the project area to the north. The Black Hills and Mingus Mountain lie to the south of SR 89A and are the most prominent features visible from the highway.

Although the project would not result in changes to background views, expansion of the highway would create a larger footprint and thus, introduce new features, including roundabouts, raised medians, and curb and gutter in the foreground. The Preferred Alternative would substantially change the existing rural visual character of the landscape to a more urban setting.

According to ADOT's *Standard Specifications for Road and Bridge Construction*, Section 104 Scope of Work, Subsection 09 Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs (2000 Edition), "The contractor shall give special attention to the effect of its operations on the landscape and shall take special care to maintain natural surroundings undamaged."

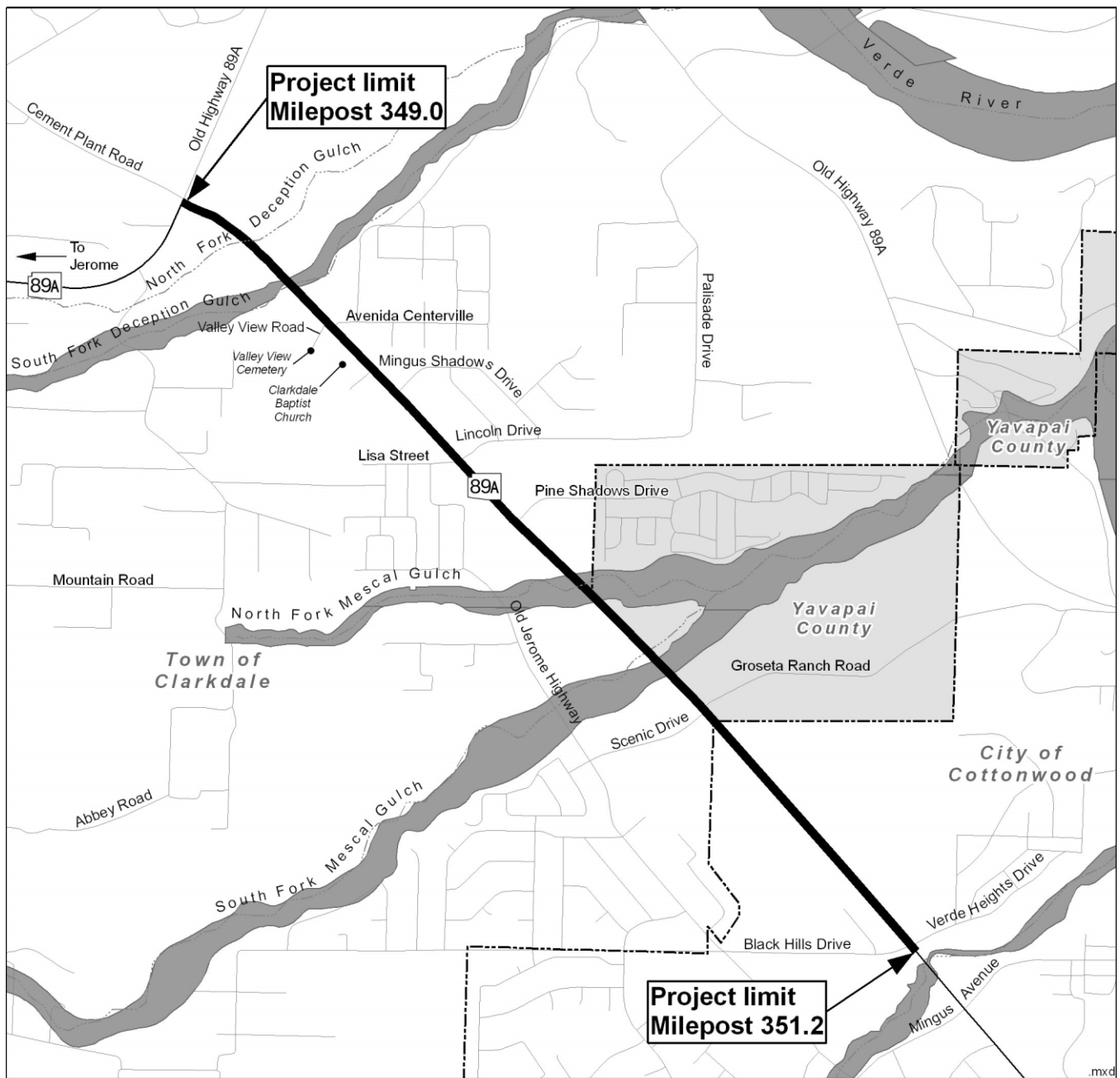
There would be no impact on the existing visual character with the No Action Alternative.

K. Drainage and Floodplain Considerations

The project area lies in the Verde River Basin. Drainage flows in a northeasterly direction through the project area; 12 natural washes intersect the project limits. The project is associated with two main washes and their floodplains, Deception Gulch (south fork) in the center of the project and Mescal Gulch (north and south fork) toward the western portion of the project (Figure 8). Flood Insurance Rate Maps were published and revised by the Federal Emergency Management Agency (FEMA) for the project area in June 2001 (Community Panel No. 04025C1414F, 04025C1418F, and 04025C1781F).

According to the Flood Insurance Rate Maps, the project is partially located in areas designated "Zone X," which includes areas within and outside both the 100- and 500-year floodplains.

Currently, drainage in the project area is conveyed through an existing ditch parallel to the roadway, as well as through 13 culverts that provide outlets for washes beneath SR 89A. The current drainage culverts at these washes would be replaced with wider structures to accommodate the four travel lanes and increased capacity and, where appropriate, to accommodate flows. Although there is an increase in the amount of impervious surface in the project area, the proposed roadway widening would not create additional backwater nor affect the floodplain since there would not be a major modification to the topography.



Source: Q3 Flood Data, Federal Emergency Management Agency, 1997

Key

- Project area
- City/Town boundary
- Yavapai County
- 100-year floodplain

Mile
0 0.5



Project Number: STP-A89-A(002)
 TRACS No.: 089 YV 349 H4129 01C
 Project Name: SR 89A: Cement Plant Rd –
 Black Hills Dr

Figure 8. 100-year floodplain

Any drainage structures and roadway improvements that encroach into the designated floodplain would be designed to meet both the ADOT criteria for a 50-year storm and FEMA regulations. The drainage structures and roadway improvements would also meet FHWA guidelines for a 100-year storm for protection of adjacent private properties. Existing cross-culverts that meet current ADOT standards would be incorporated into the widened roadway through extensions as necessary. In compliance with FEMA floodplain requirements, the ADOT Project Manager would submit project design plans to the Yavapai County Floodplain Administrator's Office (520.771.3196) for review and comment during final design.

The Preferred Alternative would not cause a major modification to the topography of the project area but would improve structures to maintain flood control and adequately handle water flows; therefore, it would have a long-term minor beneficial local impact on drainage and floodplains.

The No Action Alternative would retain the roadway in its current condition; therefore, the No Action Alternative would have no short- or long-term impacts on drainage and floodplains.

L. Sections 404/401 of the Clean Water Act

The US Army Corps of Engineers (Corps) has jurisdiction over waters of the United States, including navigable waters and their tributaries, wetlands and lakes, intermittent streams, and other waters not part of a tributary system to interstate waters or to navigable waters of the United States. In general, for Arizona, such jurisdiction is for any stream, lake, or wash that carries stormwater. This jurisdiction includes those drainages that do not have perennial flowing water.

Any activity that discharges dredged or fill material into designated jurisdictional areas requires a Section 404 Permit. A preliminary jurisdictional delineation completed for the project determined that there are waters of the United States within the project area. Coordination would be initiated with the Corps to determine the type of permit required for the proposed construction. It is anticipated that a Nationwide Permit would be required for the proposed improvements because of the limited extent of excavation and fill required for the widening of the roadway and the corresponding expansion of several culverts and the drainage system. All required Section 404 permits and Section 401 Water Quality certifications would be obtained by ADOT during final design. ADOT EPG would process any necessary Section 404 permits through the Corps. The contractor would comply with the terms and conditions of the Corp's Section 404 Permit and the Arizona Department of Environmental Quality (ADEQ) Section 401 Water Quality Certification for work affecting any of the washes in the project area that are under the jurisdiction of the Corps.

Implementation of the Preferred Alternative would be completed after obtaining appropriate permits. The Preferred Alternative would have a long-term minor adverse impact on waters of the United States.

The No Action Alternative would have no impact on waters of the United States.

M. Arizona Pollutant Discharge Elimination System

The Ninth Circuit Court of Appeals issued an opinion on August 22, 2005, (*Defenders of Wildlife v. EPA*, No. 03-71439, slip op. 10983) concerning the EPA's delegation of the Clean Water Act Section 402 permitting authority to the State of Arizona. Therefore, until a court ruling is issued, the ADEQ has permitting authority on non-Tribal lands; however, this authority may be removed at a later date. Further, the EPA is not reviewing permit applications that are currently the jurisdiction of ADEQ.

Because more than 1 acre of land would be disturbed, an Arizona Pollutant Discharge Elimination System (AZPDES) General Permit would be required. A Stormwater Pollution Prevention Plan (SWPPP) would be developed as part of the AZPDES General Permit. This permit would incorporate temporary erosion control measures to be used during construction and permanent erosion control measures to be used when the project is completed, as well as good housekeeping practices for the control and prevention of water pollutant releases. The ADOT Roadside Development Section would determine who would prepare the SWPPP. The ADOT Prescott District and the contractor would submit the Notice of Intent and the Notice of Termination to ADEQ. The SWPPP would establish the anticipated techniques for controlling erosion and sediment discharge from any construction area. Possible temporary erosion control techniques may include sand bags, earth berms, silt fences, and geotextile fabrics. Examples of permanent erosion control measures that might be used are the riprap of cut-and-fill transition areas and headwall, pipe inlet/outlet rock mulch treatment, and bioengineering (enhanced vegetation) techniques.

The effects of sedimentation would be greatest during the construction and revegetation period. Potential sources of erodible material created during the highway construction process would include loose fill adjacent to drainage features, disturbed earth from roadway leveling, and excavated and backfilled soil around roadway and drainage structures. Because of disturbance to surface soils, some sediment transport would be expected after construction is complete. Temporary sedimentation associated with construction would be managed by erosion control measures stipulated in ADOT's specifications, thereby reducing potential impacts on water quality to drinking water or groundwater. Erosion associated with the removal of vegetation would be controlled in accordance with ADOT's

Standard Specifications, the AZPDES General Permit, and the SWPPP prepared for the project. As the disturbed areas are reseeded and vegetation reestablished, erosion would decrease to natural levels.

According to ADOT's *Standard Specifications for Road and Bridge Construction*, Section 104 Scope of Work, Subsection 09 Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs (2000 Edition), the ADOT Prescott District would ensure that "The contractor should take sufficient precautions, considering various conditions, to prevent pollution to streams, lakes, and reservoirs with fuels, oils, bitumens, calcium chloride, fresh Portland cement, raw sewage, muddy water, chemicals, or other harmful materials. None of these materials shall be discharged into any channels leading to such streams, lakes, or reservoirs." In the event of accidental chemical spills during construction, the site would be cleaned up to prevent chemical introduction into the surface or ground water systems. These measures would help protect both surface and groundwater resources in the project area.

Implementation of the Preferred Alternative would be completed after implementing appropriate erosion control measures; therefore, the Preferred Alternative would have long-term minor adverse impacts on water quality.

The No Action Alternative would have no impact on water quality.

N. Vegetation and Invasive Species

The project area is located in the Semidesert Grassland biotic community (Brown 1994). The predictability and quantity (10–18 inches) of precipitation that occurs in this region during the spring and summer is required to support the perennial grasses found in this community type, such as grama grasses (*Bouteloua* spp.), tobosa grass (*Hilaria mutica*), curly mesquite grass (*Hilaria belangeri*), three-awns (*Aristida* species spp.), bush muhly (*Muhlenbergia porteri*), and Arizona cottontop (*Trichachne californica*). The dominant vegetation in the project area is catclaw acacia, with lesser quantities of mesquite and desert broom. Washes within the project area support a higher density of vegetation, particularly catclaw acacia, than in the surrounding uplands.

Portions of the proposed right-of-way have been previously cleared of vegetation for construction of existing roadways and, residential and commercial uses. Additional areas within the proposed right-of-way boundaries would be cleared and grubbed. The areas disturbed by construction of the proposed project would be reseeded with species native to the project vicinity. Erosion associated with

the removal of vegetation would be controlled in accordance with ADOT's *Standard Specifications*, the AZPDES, and the SWPPP permits prepared for the project.

Based upon "Executive Order 13112" on invasive species, dated February 3, 1999, all projects will, "...subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: i) prevent the introduction of invasive species; ii) detect and respond rapidly to, and control, populations of such species in a cost-effective and environmentally sound manner; iii) monitor invasive species populations accurately and reliably...[and] iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded."

To prevent the introduction of invasive species, all construction equipment will be washed at the contractor's storage facility prior to entering the construction site. All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction will be seeded using species native to the project vicinity. In addition, to prevent the spread of invasive species seed to uncontaminated areas, construction personnel will inspect all construction equipment and remove all attached plant/vegetation debris prior to leaving the construction site.

The Preferred Alternative would have short-term minor adverse and long-term negligible adverse impacts on vegetation in the project area. In addition, the Preferred Alternative would have no potential to spread invasive species.

The No Action Alternative would have no impacts on vegetation and no potential to spread invasive species.

O. Threatened/Endangered Species, Designated Critical Habitat, and Sensitive Species

The US Fish and Wildlife Service's (USFWS) list of threatened, endangered, proposed, and candidate species for Yavapai County was reviewed. Based on their presence in Yavapai County and the potential for occurrence within the project area, the following three threatened or endangered species were evaluated in a Biological Evaluation (BE) (ADOT 2004d): the razorback sucker (*Xyrauchen texanus*, federally listed endangered), the spokedace (*Meda fulgida*, federally listed threatened), and the bald eagle (*Haliaeetus leucocephalus*, federally listed threatened).

1. Razorback Sucker

The razorback sucker is a fish reaching about 3 feet in length that evolved in rivers with widely fluctuating water levels. They tend to occupy strong, uniform currents over sandy bottoms but also use backwaters and undercut banks. The razorback sucker was formerly abundant in the Colorado River and many of its larger tributaries. Construction of dams on the Colorado River, beginning with California's Imperial Dam in the mid-1930s, has disrupted razorback sucker migration patterns and has altered or eliminated habitat. The introduced common carp and other nonnative fish have been observed to eat razorback sucker eggs and larvae.

The combination of these and other factors have resulted in an increasing scarcity of the species in the lower Colorado River Basin. The known distribution of this species is currently limited to surviving populations in Lake Mead, Lake Mohave, Lake Havasu, and the Colorado River corridor through the Grand Canyon and reintroduced populations in the upper Verde and upper Salt rivers.

Critical habitat for the razorback sucker is designated in the Verde River approximately 1 mile northeast of the project area. While the project has the potential to result in an increased amount of sediment in runoff that is transported into the Verde River by way of ephemeral washes flowing through the project area, AZPDES and Corps Section 404 permits would be required that would prevent or reduce the amount of sediment entering washes because of construction activities. Although such measures would not completely eliminate sediment transport should a flood occur during construction or shortly thereafter, the amount of sediment that might be transported into the Verde River because of construction activities would be insignificant when compared to the typically high sediment loads normally transported by ephemeral desert washes into the Verde River. No project-related activities would occur within the Verde River. Therefore, neither the Preferred Alternative nor the No Action Alternative would affect the razorback sucker or its habitat.

2. Spikedace

The spikedace is a small fish, rarely exceeding 3 inches in length. Habitat includes medium to large, shallow, perennial, moderate-grade streams where sand, gravel, or cobble substrates are present and associated with riparian vegetation at elevations below 6,000 feet. Historically, the spikedace was widely distributed, inhabiting the main bodies and tributaries of the Salt, Verde, and Gila rivers, as well as the Agua Fria, San Pedro, and San Francisco River systems. Today, this fish exists only in Aravaipa Creek (tributary to the San Pedro River), Eagle Creek (tributary to the Gila River), and the upper Verde River in Yavapai County. The decline of this species is mostly due to competition with nonnative species and habitat modification resulting from water impoundment, stream channelization, dams,

diversions, and bank stabilization and other erosion control efforts, as well as grazing, mining, timber harvesting, water withdrawals, and other developments.

Critical habitat for the spikedace was designated in the Verde River approximately 1 mile northeast of the project area; however, this designation was removed in 2002. While the project could result in an increased amount of sediment in runoff that is transported into the Verde River by way of ephemeral washes flowing through the project area, AZPDES and Corps Section 404 permits would be required that would prevent or reduce the amount of sediment entering washes because of construction activities. Although such measures would not completely eliminate sediment transport should a flood occur during construction or shortly thereafter, the amount of sediment that might be transported into the Verde River because of construction activities would be insignificant when compared to the typically high sediment loads normally transported by ephemeral desert washes. No project-related activities would occur within the Verde River. Therefore, the Preferred Alternative and the No Action Alternative would not affect the spikedace or its habitat.

3. Bald Eagle

Bald eagles occur year-round in central Arizona and are most often found in association with flowing rivers and major reservoirs. Bald eagles are not known to breed in or near the project area—the nearest known breeding area is approximately 7 miles north of the project site near the confluence of Sycamore Creek and the Verde River. Bald eagles from colder northern climates spend the winter in northern Arizona and portions of central Arizona; these migrant bald eagles generally arrive in wintering habitat in late October and leave in April. Important habitat components for wintering bald eagles include elevated perch and roost sites and adequate food supplies, including terrestrial vertebrates, fish, waterfowl, and carrion.

Suitable habitat for wintering bald eagles occurs in the project vicinity along the Verde River but does not occur in the project area because no large trees are present. Although bald eagles may pass through the project area while traveling or foraging, bald eagle foraging areas or roosting perches do not occur within the project limits. Therefore, neither the Preferred Alternative nor the No Action Alternative would affect the bald eagle or its habitat.

4. Arizona Species of Concern

The Arizona Game and Fish Department (AGFD) provided a list of Wildlife of Special Concern in Arizona (Appendix A, page A-26). ADOT has determined that no special actions are necessary during construction for the protection of these species, and AGFD did not request any mitigation measures.

5. Arizona Native Plant Law

The project site was surveyed for the presence of native plants protected under the Arizona Native Plant Law. Mesquite trees, which are Salvage Assessed Protected Native Plants, were found within the project area. In accordance with the Arizona Native Plant Law, ADOT's Roadside Development Section would contact the Arizona Department of Agriculture at least 60 days prior to any construction activity.

6. Summary

The Preferred Alternative would have no impact on any threatened or endangered species or species of special concern. There would be short-term, minor adverse impacts on native plants in the project area from clearing and grubbing activities during construction.

The No Action Alternative would have no impact on any threatened or endangered species, species of special concern, or on native vegetation.

P. Hazardous Materials

Hazardous materials are regulated by the federal Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability Act, commonly known as Superfund. ADEQ enforces the regulations promulgated under these Acts and the amendment, the Superfund Amendments and Reauthorization Act of 1986. The inherent environmental concerns associated with hazardous materials require a preliminary investigation into the location of permitted and nonregulated hazardous material sites within the project area.

A Preliminary Initial Site Assessment was completed in 2004. A review of the ADEQ and EPA databases conducted in July 2005 showed no hazardous materials concerns within or adjacent to the project area.

According to ADOT's *Standard Specifications for Road and Bridge Construction*, Section 107 Legal Relations and Responsibility to Public, Subsection 07 Sanitary, Health, and Safety Provisions (2000 Edition), "During construction operations, should material be encountered which the contractor believes to be hazardous or contaminated, the contractor shall immediately do the following: (1) stop work and remove workers within the contaminated areas ... (2) barricade the area and provide traffic controls ... and (3) notify the Arizona Department of Transportation Engineer ..." The ADOT Engineer would arrange for proper assessment, treatment, or disposal of those materials. Such locations would be investigated and proper action implemented prior to the continuation of work in that location.

During final design, the ADOT Project Manager would contact the ADOT EPG Hazardous Materials Coordinator (602.712.7768) to determine the need for additional site assessment.

The No Action Alternative and the Preferred Alternative would have no impacts on hazardous materials.

Q. Material Sources and Waste Materials

Approximately 68,000 cubic yards of borrow material would be required to complete the proposed improvements to SR 89A. No material source has been identified for the borrow. Any material sources required for this project outside of the project area would be examined for environmental effects by the contractor, prior to use, through a separate environmental analysis in accordance with ADOT's *Standard Specifications for Road and Bridge Construction*, Section 1001 Material Sources, Subsection 2 General (2000 Edition).

According to ADOT's *Standard Specifications for Road and Bridge Construction*, Section 107 Legal Relations and Responsibility to Public, Subsection 11, Protection and Restoration of Property and Landscape (2000 Edition), "Materials removed during construction operations such as trees, stumps, building materials, irrigation and drainage structures, broken concrete, and other similar materials shall not be dumped on either private or public property unless the contractor has obtained written permission from the owner or public agency with jurisdiction over the land. Written permission would not be required, however, when materials are disposed of at an operating, public dumping ground." Excess waste material and construction debris would be disposed of at sites supplied by the contractor or at a municipal landfill approved under Title D of the Resource Conservation and Recovery Act, construction debris landfill approved under Article 3 of the Arizona Revised Statutes § 49-241 (Aquifer Protection Permit) administered by ADEQ, or an inert landfill.

Although the Preferred Alternative would require borrowing material from sources outside the project, these materials would be evaluated prior to the work and, therefore, would have no adverse impact on borrow or waste materials for this project.

With the No Action Alternative, there would be no need for borrow or waste materials, so no impact on material sources and waste materials would occur.

R. Secondary and Cumulative Impacts

The assessment of secondary (indirect) and cumulative impacts is required by CEQ regulations (40 CFR § 1500–1508) to satisfy the requirements of NEPA. The assessment of secondary and cumulative impacts in this EA was made based on guidance provided in the April 1992 FHWA position paper *Secondary and Cumulative Impact Assessment in the Highway Project Development Process*, in the January 1997 CEQ handbook *Considering Cumulative Effects Under the National Environmental Policy Act*, and in FHWA's January 2003 *Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact Considerations in the NEPA Process*. The terms “impacts” and “effects” are used interchangeably in the CEQ regulations (40 CFR § 1508.8), and according to FHWA guidelines, the terms “secondary” and “indirect” are used synonymously as well.

The level of detail and documentation of secondary and cumulative impacts provided in this EA is commensurate with the potential for the Preferred Alternative to involve these impacts. Environmental resources that are not directly impacted by the proposed action would not contribute to an indirect or cumulative impact and are not discussed in this section of the EA. All impacts discussed are considered long-term. Short-term effects, such as construction-related impacts, are assumed not to contribute to secondary or cumulative effects. In general, the effects on each environmental resource would be identified as *secondary* or *cumulative* in nature and as either having a *beneficial*, *adverse*, or *neutral* effect on a given resource. The magnitude or degree of impact would be classified as *minor*, *moderate*, or *substantial*. For example, a *moderate, beneficial, secondary* effect means that the change in the environmental resource as a result of the secondary effects of the Preferred Alternative would be beneficial and that the magnitude of change in the resource would be considered moderate. The analysis focuses on current and future actions that would be reasonably expected to contribute to cumulative impacts on key resources.

1. Secondary Effects

CEQ broadly defines secondary effects as those effects that are “caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable” (40 CFR § 1508.8). Such indirect effects may include growth-inducing or accelerating effects; effects related to induced changes in land use, population density, or growth rate; and other related effects on air, water, and other natural systems—including ecosystems. Potential impacts are discussed qualitatively in the following text and are based on reasonably foreseeable future actions in the project area that are attributable to the construction of the Preferred Alternative. Secondary effects on land use, noise, visual resources, and Section 404/401 and AZPDES are described below; secondary effects on resources not included in the following discussion were considered negligible.

a. Land Use

Even without the improvements to SR 89A, conversion of available undeveloped private land along the alignment to residential or commercial uses and development is expected to continue. The *City of Cottonwood General Plan* and *Clarkdale General Plan* both identify this stretch of SR 89A for continued development to accommodate residential, commercial, and industrial properties. Zoning is in place along this section of roadway to protect the desired land use character of the area and, over the past 20 years, the area has grown and developed in accordance with either community's general plans. The Preferred Alternative is not likely to induce or accelerate the rate of changes in land use and, therefore, would not contribute to secondary impacts.

b. Noise

The implementation of the Preferred Alternative is not likely to induce or accelerate the development of the land use categories considered to be noise sensitive. The respective communities have already approved land use and zoning for the corridor. The improved flow of traffic on SR 89A may indirectly benefit noise levels in the communities by diverting truck traffic or cut-through traffic from other roadways. The Preferred Alternative would not contribute to adverse impacts on noise levels.

c. Visual Resources

When the anticipated residential and commercial developments along the corridor are completed, more vehicles are expected to use SR 89A to reach local and regional destinations. The 2026 projection of ADT volumes is estimated at 40,000 vpd (ADOT 2004a).⁸ Because the Preferred Alternative would accommodate more motorists, signs and advertisements along the highway may increase, which would further change the existing visual character and may block or partially obstruct views to the Black Hills, Mingus Mountain, and red-rock formations near Sedona. Based on the increased traffic capacity, there would be minor, secondary impacts associated with the Preferred Alternative on visual resources.

d. Water Resources

Because the Preferred Alternative would not likely induce the rate of change in land use within the communities, there would be no indirect impacts attributed to disturbance to waters of United States created by the proposed improvements to SR 89A.

2. Cumulative Effects

Cumulative effects, as defined in 40 CFR § 1508.7, are "... the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably

⁸ According to ADOT's Roadway Design Guidelines, the design of new facilities should be based on traffic projects 20 years (to the nearest 5-year increment) in the future and consider future growth and impacts of planned projects.

foreseeable future actions, regardless of which agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” Only past, present, and reasonably foreseeable future actions that incrementally add to the cumulative impacts of the Preferred Alternative were considered. All impacts described are considered long term. Short-term effects, such as construction-related impacts, are assumed to not contribute to cumulative effects. In general, the impacts on each environmental resource would be identified as *cumulative* in nature and as either having a *beneficial*, *neutral*, or *adverse* impact on a given resource. The magnitude or degree of impact would be classified as *negligible*, *minor*, *moderate*, or *major*. For example, a beneficial, moderate cumulative impact means that the cumulative change in the environmental resource is positive, and the magnitude of change in the resource is considered moderate.

For this assessment of cumulative impacts, past, present, and reasonably foreseeable future transportation and non-transportation-related projects in the geographic area of influence were evaluated based on the best available information from relevant planning agencies. Generally, these projects would contribute to enhanced access to the surrounding areas. The design year (2026) was used for the analysis, representing the estimated duration of acceptable functionality for the Preferred Alternative. Given the relatively limited amount of development in the region, the past time horizon was defined by the earliest identifiable action—the initial construction of SR 89A completed in 1966.

Past Actions/Completed Projects

Current resource conditions are detailed in Parts B through Q of Section IV. Affected Environment, Environmental Consequences, and Mitigation Measures. The key past actions that directly and indirectly resulted in these current conditions are listed below. The continued implementation and use of the following actions since their completion is implied.

- Construction of SR 89A.
- SR 89A widened to four-lane divided highway from SR 179 in Sedona to Cottonwood.
- Within Cottonwood, SR 89A widened from its junction with SR 260 to Mingus Avenue.

Ongoing/Present Actions

- Commercial retail development (Groseta Development) within the project corridor.
- Residential development (Cliffrose Village—240 residential units) along SR 89A and Scenic Drive.
- Residential development (Mountain Gates Community—605 residential units) along SR 89A and Avenida Centerville. The connection to SR 89A would be achieved through dedicated right-of-way by the developer at the Avenida Centerville alignment.

- Realignment of Avenida Centerville to accommodate the Mountain Gates Community residential development.
- Residential development (Pine Shadows II) along SR 89A and Pine Shadows Drive.
- Residential development (On The Green—290 residential units) along SR 89A and west of Groseta Ranch Road.
- Widening of SR 260 to four lanes from Cottonwood to Old SR 279.
- Widening of SR 179 to two lanes with pedestrian and bicycle accommodations from I-17 to the intersection of SR 89A in Sedona.
- Construction of extension of Willard Street to Monte Tesoro Drive (south of the project area within the City of Cottonwood).
- Construction of Mingus Road Extension between Main Street and SR 89A (south of the project area within the City of Cottonwood).
- Reconstruction of Fir Street from Camino Real to Monte Tesoro Drive (south of the project area within the City of Cottonwood).
- Expansion of the existing Mold-In Graphics property (refer to Figure 3, page 4).

Reasonably Foreseeable Future Actions

The following future actions are reasonably foreseeable within the geographic limits of the cumulative impacts analysis.

- Improvement of Groseta Ranch Road to a two-lane paved collector.
- Improvement of Centerville Road to a two-lane paved collector.
- Construction of a two-lane limited access loop from Black Hills Drive to Fir Street, west of SR 89A.
- Construction of a 13-acre industrial subdivision along SR 89A, east of Scenic Drive.

a. Land Use

As previously stated, Yavapai County's population is expected to grow to 44 percent in 2020 from 2000. Clarkdale and Cottonwood have also experienced similar growth and have major residential developments planned. Therefore, when considered along with past, present, and reasonably foreseeable future projects the Preferred Alternative would contribute to substantial, neutral cumulative impacts on land use.

b. Noise

Future commercial, residential, and recreational vehicular traffic would be the primary noise source in the project area. The proposed project is not expected to contribute to an increase in traffic but rather to improve the highway's LOS. As development of both commercial and residential properties continues

along this corridor, an increase of associated noise and vehicles using the roadway would increase the surrounding noise levels. Therefore, when considered along with past, present, and reasonably foreseeable future projects the Preferred Alternative would improve the flow of traffic and relieve congestion. These actions would contribute to moderate adverse cumulative impacts on noise levels in sensitive areas such as residential developments.

c. Visual Resources

The town of Clarkdale and the city of Cottonwood's populations have increased by 60 percent and 55 percent, respectively, between 1990 and 2000, and the growth is expected to continue. To accommodate the development of the communities, the landscape over the years has changed from a setting dominated by natural features, such as the Verde River and Mingus Mountain, to an area dominated by built features. As the trend to urbanization continues, the setting would become more suburban. The development of future transportation-related and non-transportation-related projects would continue this trend of change in the visual character of the area. Therefore, when considered along with past, present, and reasonably foreseeable future projects the Preferred Alternative would create major, neutral, cumulative effects on visual resources.

d. Water Resources

The substantial growth both in population and of commercial and residential developments has impacted waters of the United States. Any disturbance to waters of the United States would be required to comply with the Clean Water Act and acquisition of the applicable Section 404 permits. Therefore, when considered along with past, present, and reasonably foreseeable future projects the Preferred Alternative would be a minor, adverse cumulative impact on water resources from the Preferred Alternative and past, present, and future foreseeable actions.

V. PUBLIC AND AGENCY INVOLVEMENT

A. Agency and Stakeholder Scoping/Consultation

Coordination letters were sent to the following agencies and stakeholders:

- Advisory Council on Historic Preservation
- ADEQ
- AGFD
- American Legion Post #25
- Arizona Department of Public Safety
- Arizona SHPO
- Clarkdale City Council
- Clarkdale Engineer
- Clarkdale Fire Chief
- Clarkdale Foothills
- Clarkdale Mayor
- Clarkdale Planning Department
- Clarkdale Police Chief
- Clarkdale Public Works Department
- Clarkdale Streets/Public Works
- Clarkdale Town Attorney
- Clarkdale Town Clerk
- Clarkdale Town Manager
- Clarkdale Vice Mayor
- Cottonwood Chamber of Commerce
- Cottonwood City Clerk
- Cottonwood City Council
- Cottonwood City Engineer
- Cottonwood City Manager
- Cottonwood Community Development
- Cottonwood Fire Chief
- Cottonwood Mayor
- Cottonwood Planning and Zoning
- Cottonwood Police Chief
- Cottonwood Public Works
- Cottonwood Vice Mayor
- Encoder Technology
- Groseta Ranches, Limited Liability Corporation
- Hualapai Tribe
- Hopi Tribe
- Loyal Order of Moose
- Masonic Lodge—Verde Valley
- Mold in Graphics Systems
- Navajo Nation
- Olsen's Grain, Inc.
- Phoenix Cement Company
- Prescott-Yavapai Indian Tribe
- San Carlos Apache
- Shephard – Weshitzer, Inc.
- State Transportation Board
- Transylvania International
- United States Department of Agriculture
- US West/QWEST
- USFWS
- Verde Valley Cyclists Association
- Verde Valley Transportation Planning Organization (TPO)
- VFW Post #7400
- Verde Valley Cyclist Coalition
- Yavapai-Apache Nation
- Yavapai County Education Service Agency, Superintendent of Schools
- Yavapai County Supervisor
- Yavapai County Emergency Services Department
- Yavapai County Engineer
- Yavapai County Planning and Zoning Department
- Yavapai County Public Works Department
- Yavapai County Sheriff

An agency scoping meeting was held on November 28, 1995, at the Clark Memorial Clubhouse in Clarkdale to present the alternatives developed in the initial Design Concept Study for SR 89A and to obtain input from the affected agencies and stakeholders. Approximately 13 people attended this meeting. Two comments were received as a result of the meeting. The City of Cottonwood Community Development Director replied with no specific comments relating to the environmental issues within the corridor and the Yavapai County Public Works Administration forwarded to ADOT a copy of the Del Webb traffic analysis of SR 89A and the intersection of Verde Heights Drive along with a copy of ADOT's initial comments on the report.

Meetings were held on June 8, 2003, and June 21, 2003, with the City of Cottonwood and the Town of Clarkdale councils, respectively, to discuss the feasibility of a roundabout at the intersection of SR 89A and Cement Plant Road. Both councils requested the evaluation of roundabouts at three additional intersections.

On November 18, 2003, the roundabout alternative was presented to the Town of Clarkdale. The Town voted unanimously in favor of this alternative. On November 25, 2003, the roundabout alternative was presented to the City of Cottonwood. The City voted 6 to 1 in favor of roundabouts as an access control method for intersections in this segment of roadway.

In August 2004, coordination letters were distributed to community representatives, along with state and federal agencies requesting any known environmental concerns within the project area. Agency comment letters were received from the USFWS; the Clarkdale Fire Department; the City of Cottonwood City Engineer and Community Development Director; the Arizona Department of Public Safety; the Clarkdale Chamber of Commerce; AGFD; Yavapai County Public Works Department; ADEQ; and the Northern Arizona Council of Governments. The Town of Clarkdale Fire Department responded that they were not aware of any environmental impacts as a result of the project (letters are included in Appendix A).

The USFWS responded with a letter referring to the USFWS lists of candidate, proposes, threatened, and endangered species and relevant designated or proposed critical habitat. Additionally, USFWS recommended that the project use best management practices to minimize impacts on water quality, consider species listed under the Migratory Bird Treaty Act, protect riparian areas, and contact the Corps and applicable Arizona Indian Tribes. ADOT has addressed each of these items as part of the environmental clearance process and has determined that there would be no impacts on threatened or endangered species, designated or proposed critical habitats, migratory birds protected under the Migratory Bird Treaty Act, or riparian areas. Impacts on water quality would be minimized through the use of best management practices and the implementation of a SWPPP. Impacts on jurisdictional waters of the United States have been coordinated through the Corps and would be covered under a Section 404 permit. The various Indian tribes were included in project scoping, and no issues have been raised.

The City of Cottonwood responded with the following comments and concerns:

- Supports the Preferred Alternative.
- Supports the Preferred Alternative because it retains the existing Black Hills Drive and Verde Heights Drive intersection; the other alternatives that use traffic signal control propose relocating

Black Hills Drive. The Preferred Alternative is revenue neutral; a street relocation would cause the city to develop a capital project to acquire right-of-way and build the new alignments of Black Hills Drive and Verde Heights. There is strong public demand and economic reasons for Black Hills Drive and Verde Heights remaining in place.

- Indicates that the Preferred Alternative requires a strong public education program because there is public skepticism regarding the introduction of a new traffic intersection design.
- Recommends using the roundabout that is under construction at Montezuma Castle Highway just east of I-17 as an education tool.
- Prefers that the selected alternative include appropriate pedestrian and bicycle facilities as an element of the project design and not as an “add-on enhancement”. Bicycles lanes should encourage the use of alternative transportation while protecting the safety of the user. The streetscape design should safely and attractively incorporate pedestrian-oriented features, especially because of the nature and composition of traffic.
- Requests that the design be sensitive to nonmotorized trail opportunities created by the area’s natural drainage system.
- Indicates that intermittent drainages such as Mescal Wash function as vital wildlife corridors, allowing animals such as coyotes, javelinas, and foxes to travel between the foothills and the river. Therefore, the City urges ADOT to consider placing a tunnel (or similar device) under SR 89A at the Mescal Wash crossing to accommodate both drainage requirements and the circulation needs of local human and wildlife populations.
- Recommends including landscaping areas 7 to 8 feet wide between the roadway and sidewalks to separate pedestrians from the roadway.
- Requests the opportunity to provide a gateway feature that would let travelers know they have entered Cottonwood, since this stretch of SR 89A transects the Cottonwood/Clarkdale municipal boundary.

The Town of Clarkdale Chamber responded with the following comments and concerns:

- Supports the Preferred Alternative.
- States that the Preferred Alternative would provide the Town of Clarkdale with an entrance that distinguishes it from Cottonwood. Roundabouts can be designed to acknowledge the different neighborhoods in Clarkdale, and continue the feel of a small town.
- Indicates that SR 89A carries many large trucks to and from CTI and Phoenix Cement and the Town of Clarkdale believes the Preferred Alternative is safer than any of the other proposed alternatives.
- Believes that the key to providing a safe transportation corridor is moving vehicular and truck traffic efficiently and at safe speeds. The design of the Preferred Alternative meets these requirements.

- Suggests that crosswalks would help connect the east and west sides of Clarkdale by facilitating the safe movement of pedestrians.
- States that SR 89A is identified as the main commercial area of Clarkdale and, therefore, access to the businesses along SR 89A must be safe and simple to maneuver. Roundabouts allow easy access to all businesses and contribute to the safety of the SR 89A roadway.
- Acknowledges that residents have raised concerns about roundabouts. However, the Town of Clarkdale believes effective public-relations information campaign to educate people about roundabouts will allow the communities to understand how roundabouts work and therefore, people will become more comfortable using the roundabouts.
- States that the worst alternative would be a five-lane urban roadway. This alternative includes traffic lights, which would cause more air pollution; and a middle turn lane, which is believed to be very unsafe. A five-lane urban roadway would also promote an excessive number of driveways and continue the same situation that exists on SR 89A through Cottonwood, which does not meet the criteria of limited access and efficient flow of traffic.
- Urges ADOT to move forward with the Preferred Alternative on SR 89A.

The ADOT Project Team has conducted additional roundabout educational meetings for the public. Meeting summaries are documented in Appendix D. The proposed project would not incorporate landscape or pedestrian features, although it would provide adequate space for future integration.

The Yavapai County Public Works Director requested that the proposed improvements be compatible with the future urban setting of the project area, identified the need for a signal at the SR 89A/Black Hills Drive intersection, and requested that utilities be placed to accommodate the proposed cross section. AGFD provided information on special-status species within the vicinity of the project area but did express specific concerns regarding the proposed project. ADEQ provided general comments stating that as necessary, the project will require State Water Quality Standards and Clean Water Act permits. The Arizona Department of Public Safety commented that they had no safety concerns regarding the project.

B. Public Coordination/Meetings

Since the project initially began in 1995, FHWA and ADOT have conducted numerous public meetings with local residents and business owners. A list of the public scoping, coordination, and informational meetings, as well as, meetings held with individual business owners are listed below. Refer to Appendix C for additional information regarding public correspondence.

1. Public Meetings

A number of general public scoping and coordination meetings were held since 1995. Additional information regarding the following public meeting dates regarding project-specific information is discussed in the next section, V. B 2. Summary of General Public Meetings:

- November 28, 1995
- June 4, 1996
- December 2, 1997
- March 25, 2003
- April 8, 2003
- July 2, 2003
- October 9, 2003
- May 12, 2004
- April 27, 2004

In 2002–2003, the concept of adding a roundabout rather than a standard traffic interchange was introduced to the public and stakeholders. To inform the public about the design concepts and functions of a roundabout, individual meetings were held with the following stakeholders:

- City of Cottonwood Engineering Staff
- City of Cottonwood Administrative Staff
- Clarkdale Town Committee
- Clarkdale Town Council
- Cottonwood City Council
- Home Depot
- Olsen's Grain
- Phoenix Cement Company
- Pine Shadows
- Property Owners
- Town of Clarkdale
- Verde Valley TPO

In addition, meetings were held with specific individuals and groups on the following dates. Discussions at these meeting are summarized in Appendix D:

- November 13, 2002: Roundabout presentation to the Verde Valley Transportation Planning Organization
- April 25, 2003: Cement Plant Staff
- June 2, 2003: Cement Plant (Margie Beach)
- June 11, 2003: Verde Valley Transportation Planning Organization meeting
- July 8, 2003: Cottonwood City Council study session
- July 9, 2003: Verde Valley Transportation Planning Organization meeting
- July 21, 2003: Clarkdale Town Council study session
- August 5, 2003: Clarkdale Town Committee meeting
- August 13, 2003: Verde Valley Transportation Planning Organization meeting
- August 15, 2003: City of Cottonwood, Andy Groseta, and representatives from Home Depot
- August 26, 2003: Cement Plant and clients
- August 26, 2003: Town of Clarkdale and property owners
- September 10, 2003: Verde Valley Transportation Planning Organization meeting
- October 8, 2003: Verde Valley Transportation Planning Organization meeting

- October 23, 2003: Pine Shadow residents
- November 3, 2003: Olsen's Grain
- November 4, 2003: Cottonwood and Clarkdale staff
- November 12, 2003: Verde Valley Transportation Planning Organization meeting
- November 12, 2003: Town of Clarkdale, City of Cottonwood, property owners, and Cement Plant
- November 13, 2003: Clarkdale and Cottonwood joint council study session

2. Summary of General Public Meetings

A public scoping meeting was held on November 28, 1995, at the Clark Memorial Clubhouse in Clarkdale to obtain input from the public and to present the alternatives developed in the initial DCR for SR 89A. Two advertisements were placed in the *Cottonwood Journal Extra* newspaper, one on November 15, 1995, and one on November 22, 1995, notifying the public of the time and place for the meeting. Twenty-eight people attended the meeting and 11 comment sheets were submitted. A majority of the comments received were supportive, stating that improvements to the roadway are definitely needed and expediting the process would be a benefit to the adjacent communities, landowners, and businesses. In addition, comments were received regarding the preference for urban verses rural roadways. One letter was received from the Northern Arizona Council of Governments (NACOG) expressing that while there is little existing development along the corridor, it is still within the boundaries of a small urban area where a standard rural section with rumble strips would not be required. NACOG also suggests, after reviewing the Verde Valley Regional Transportation Study, to facilitate safer and easier travel by bicyclists along this corridor, the DCR should address bicycle facilities through either a rural section with 8-foot shoulders and no rumble strips or an urban section with sidewalks and striped bike lanes.

Another public meeting was held on June 4, 1996, at the Clark Memorial Clubhouse in Clarkdale. Two advertisements were placed in the *Cottonwood Journal Extra* newspaper, one in May 22, 1996, and one in May 29, 1996, notifying the public of the time and place for the meeting. The purpose of this meeting was to discuss the progress since the first public meeting, to present the initial DCR alternatives, and to obtain input on the roadway alternatives that have been developed. Eight alternatives were discussed, including the "No Action Alternative." Nineteen people attended the meeting and seven comment sheets were submitted. All of the received comments favored either a particular alternative that was considered but later eliminated from further study or the Preferred Alternative.

A public information meeting was held December 2, 1997, at the Clarkdale-Jerome Elementary School in Clarkdale. Two advertisements were placed in the *Cottonwood Journal Extra* newspaper, one on

November 18, 1997, and one November 25, 1997, notifying people of the time and place for the meeting. This meeting was held to present the Recommended Alternative to the public. No one attended the meeting, and no comment sheets were submitted.

Two public open houses were held on March 25, 2003, and April 8, 2003, in the Town of Clarkdale and the City of Cottonwood, respectively. These open houses were held to present the access control plan to the public. The access control plan presented phase I, which addresses the roadway and intersection capacity needs with the objective of optimizing access control and a management plan. This plan addressed the type and spacing of intersection access (roundabout and signalized intersection), median type, access location and spacing, and supporting street systems. This plan identified five alternatives with improvements at Cement Plant Road, Lisa Street/Lincoln Drive, Scenic Drive/Yuma Street, and a realigned Black Hills Drive. After each presentation the public was asked to comment. The Town of Clarkdale recorded four comments from the public; of those five comments received three of them were not in favor of the roundabout being placed at the intersection. One comment was to include the Groseta Ranch master plan study, wait as long as possible to install a light at Lisa Street, and request that ADOT meet with property owners.

Concerns raised by the Town of Clarkdale and the City of Cottonwood regarding a public educational program for the concept of a roundabout prompted ADOT to hold additional meetings with the public to educate the public on what a roundabout is and how it would work. Presentations and informational meetings were held with adjacent property owners, businesses, and at Town and City council meetings.

A project information meeting concerning several alternatives, including the roundabout alternatives as presented in the *SR 89A Cement Plant Road to Black Hills Drive Access Control and Capacity Needs Study* (ADOT 2004a), was held on July 2, 2003, at the ADOT Prescott District Office in Prescott. Two advertisements were placed in the *Cottonwood Journal Extra* newspaper, one on June 18, 2003, and one June 25, 2003, notifying people of the time and place for the meeting. This meeting was held to provide additional information to the public; no comments were recorded at these meetings.

An additional public meeting was held on October 9, 2003, at the Clark Memorial Clubhouse in Clarkdale. Two advertisements were placed in the *Cottonwood Journal Extra* newspaper, one on September 24, 2003, and October 1, 2003, notifying people of the time and place for the meeting. Eighty-eight people attended the meeting, and 64 comment sheets were submitted. The majority of the issues raised were concerns for older citizens residing on or near SR 89A and that the access control plan would increase the amount of time required for emergency vehicles to respond to medical emergencies. Another concern was that a roundabout would be confusing for the older citizens and for

tourists who are unfamiliar with the roadway. Other comments were that the large trucks and commercial vehicles would not be able to safely negotiate the roundabout. Business owners were mostly concerned with the impact that an access control roadway would have on their commercial property. Additional public education on roundabouts was also requested.

Another series of public meetings were held on May 12, 2004, at the Clarkdale Town Hall in Clarkdale and at the Cottonwood Public Safety Building in Cottonwood to present the Preferred Alternative. Two advertisements were placed in the *Cottonwood Journal Extra* newspaper, one on April 28, 2004, and one on May 5, 2004, notifying the public of the time and place for the meeting. These meeting were to provide the public additional information on roundabouts; no comments were recorded at these meeting. Based on comments received from ADOT, the Town of Clarkdale, and the City of Cottonwood, a fifth alternative was analyzed in the *SR 89A Cement Plant Road to Black Hills Drive Access Control and Capacity Needs Study* (ADOT 2004a), that would add a fifth roundabout between Cement Plant Road and Lisa Street/Lincoln Drive.

The proposed improvements were discussed at the Town of Clarkdale's Town Council meeting on April 27, 2004 in the Men's Lounge, Clark Memorial Clubhouse. A student from the area researched roundabouts and presented this research to the Town Council. The results of the student research showed that modern single-lane roundabouts are able to provide constant movement with little chance of traffic jams. The research also stated that the suggested speed for the roundabout was 10–15 miles per hour and could easily handle the current Cement Plant Road traffic, including the cement trucks. No public comments were recorded at this presentation.

In February 2004, a public notice was distributed in response to public comments received at the October 23, 2003, public meeting. The response letter is incorporated in Appendix D, page D-4.

In August 2004, scoping letters were distributed to adjacent property owners and residents requesting any known potential environmental concerns within the project area. Twenty-four public response letters were received, including four letters in support of the roundabout alternative, four opposing the roundabout alternative, nine supporting a 4-lane urban roadway with a turn lane, three supporting a 4-lane urban roadway with signalized intersection, two supporting a 5-lane roadway with raised medians, one request for additional access, and one concern for lower speed limits. Refer to Appendix C for additional information regarding public correspondence.

In summer 2005, a public update flier was distributed to local residents, persons that attended the previous public meetings, and persons that have previously submitted comments regarding the proposed project.

A public hearing will be held on the Draft EA, and a copy of the notice of a public hearing is included in Appendix E.

VI. CONCLUSION

The potential environmental impacts of the proposed improvements were evaluated based on both the context of the effects on the project area and the intensity or severity of impacts as defined in the CEQ Regulations. Table 4 summarizes the potential environmental impacts.

Table 4. Summary of Environmental Assessment

Environmental consideration	Result of No Action Alternative evaluation	Result of Preferred Alternative evaluation
Land Ownership, Jurisdiction, and Land Use	No impacts	Long-term minor adverse impacts
Social and Economic Resources	Long-term minor adverse impacts	Short-term minor adverse impacts Long-term moderate beneficial impacts
Title VI/Environmental Justice	No disproportionate adverse impacts	No disproportionate adverse impacts
Cultural Resources	No impacts	No impacts
Section 4(f) Resources	No impacts	No impacts
Air Quality Analysis	Long-term minor adverse impacts	Short-term minor adverse impacts Long-term minor beneficial impacts
Noise Analysis	Long-term minor adverse impacts	Long-term minor adverse impacts
Utilities	No impacts	Short-term minor adverse impacts
Visual Resources	No impacts	Substantial change in existing landscape character
Drainage and Floodplain Considerations	No impacts	Long-term minor beneficial impacts
Sections 404/401 and AZPDES	No impacts	Long-term minor adverse impacts
Vegetation and Invasive Species	No impacts	Short-term minor adverse impacts Long-term negligible adverse impacts
Threatened/Endangered/Sensitive Species	No impacts	Short-term minor adverse impacts
Hazardous Materials	No impacts	No impacts
Material Sources and Waste Materials	No impacts	No impacts

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